BLM LIBRARY
88045237

U.S. Department of the Interior
Bureau of Land Management

Burns District Office
HC 74-12533, Hwy 20 West
Hines, Oregon 97738

December 1994

South Steens Allotment Management Plan and Environmental Assessment

QH
76.5
.07
B876
1994

As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering the wisest use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to assure that their development is in the best interest of all our people. The Department also has a major responsibility for American Indian reservation communities and for people who live in Island Territories under U.S. administration.

BLM/OR/WA/EA-95/004+1792

BLM LIBRARY
RS 150A BLDG. 50
DENVER FEDERAL CENTER
P.O. BOX 25047
DENVER, CO 80225

ID88045337

QH
76.5
.07
B876
1994

DRAFT

SOUTH STEENS ALLOTMENT MANAGEMENT PLAN AND ENVIRONMENTAL ASSESSMENT

EA OR-026-93-015

BLM LIBRARY
RS 150A BLDG. 50
DENVER FEDERAL CENTER
P.O. BOX 25047
DENVER, CO 80225

DRAFT

TABLE OF CONTENTS

I. INTRODUCTION 1

A. Background 1

Table 1. Miles of Riparian Habitat on Private Land . . 1
Map 1. Pasture Boundaries and Land Status 2
Table 2. Acreage by Pasture and Ownership 3

B. Goals and Objectives 3

C. Resource Information 3

1. Vegetation 3
2. Special Status Species 4

Map 2. Dominant Vegetation Zones 5

3. Wildlife 7
4. Riparian and Wetland 8

Table 3. Public Land Riparian Condition 8
Table 4. Wetlands 9

5. Water Quality and Quantity 9

Map 3. Wetlands 10

6. Special Management Areas 12

a. Wilderness Study Areas 12

Table 5. Wilderness Study Areas 12
Map 4. Wilderness Study Area Boundaries 13

b. Areas of Critical Environmental Concern 14
c. Wild Horses 14

Map 5. Areas of Critical Environmental Concern . . . 15

7. Juniper Invasion 16
8. Grazing History 16

Table 6. Ecological Status 17

D. Planning History 17

Map 6. Ecological Status 18
Table 7. Acreage of Active Wild Horse Herd Areas . . . 19

E. Alternatives Considered But Not Analyzed 19

Map 7. Wild Horse Herd Management Area Boundaries 20

DRAFT

TABLE OF CONTENTS (Cont.)

II. DESCRIPTION OF THE PROPOSED ACTION 22

A. General Discussion 22
B. Grazing Schedule 23
C. Projects 25

1. Fence 25

Map 8. Proposed Range Improvements (Proposed Action) . . . 26
Map 9. Areas Suitable for Fire Reintroduction 27

2. Spring Developments 28
3. Wells and Pipelines 29
4. Fire 29

a. Juniper 30
b. Low Sagebrush 31
c. Aspen 31
d. Wyoming Big Sagebrush 31
e. Mountain Big Sagebrush 32

5. Study Exclosures 32

III. DESCRIPTION OF ALTERNATIVE PLANS 33

A. Alternative I 33
B. Alternative II 34

Map 10 Proposed Range Improvements (Alternative II) . . . 35

C. Alternative III No Action 36

IV. ENVIRONMENTAL CONSEQUENCES 36

A. Proposed Action 36

1. Anticipated Impacts 36

Table 8. Public Land Riparian Impacts 38

2. Mitigating Measures 43
3. Cumulative Impacts 43
4. Residual Impacts 44

B. Alternative I 44

1. Anticipated Impacts 44

Table 9. Public Land Riparian Impacts 46

2. Mitigating Measures 46
3. Cumulative Impacts 46
4. Residual Impacts 46

DRAFT

TABLE OF CONTENTS (Cont.)

C. Alternative II 47

1. Anticipated Impacts 47

Table 10. Public Land Riparian Impacts 48

2. Mitigating Measures 48
3. Cumulative Impacts 48
4. Residual Impacts 48

D. Alternative III 48

1. Anticipated Impacts 48

Table 11. Public Land Riparian Impacts 50

2. Mitigating Measures 50
3. Cumulative Impacts 50
4. Residual Impacts 50

V. CONSULTATION AND COORDINATION 51

VI. PARTICIPATING STAFF 51

VII. LITERATURE CITED 51

VIII. APPENDICES

Appendix A Aquatic Habitat Inventory 53

Appendix B Goals and Management Objectives for South Steens Allotment . . 54

Appendix C Special Status, Threatened and Endangered Species 57

Appendix D Water Quality Parameters 58

Appendix E South Steens Wild Horse Herd Management Area Plan Update . . . 61

Appendix F Ecological Status by Pasture 64

Appendix G South Steens Monitoring Plan 65

Appendix H General Schedule for Adaptive Rotational Grazing 71

Appendix I General Schedule for Seasonal Grazing, April 1 - July 15 on Public Land Above Catlow Rim 76

Appendix J Grazing Formula Table for Alternative 1 77

DRAFT

I. INTRODUCTION

A. Background

The South Steens Allotment is located 65 miles south of Burns on Steens Mountain, west of the ridgeline. It consists of 228,428 acres of public land and 103,972 acres of intermingled, unfenced private land. Riparian habitat along streams and wetlands are an extremely important issue in the allotment. These areas provide important habitat for wildlife and fish, some of which are special status species. There are 137 miles of streams in the allotment, 55.5 miles or 40 percent are on public land, mostly at lower elevations. Included are portions of the Donner und Blitzen River system, a designated National Wild and Scenic River. (For more information, refer to the Final River Management Plan/Environmental Assessment (EA) dated May 1993.)

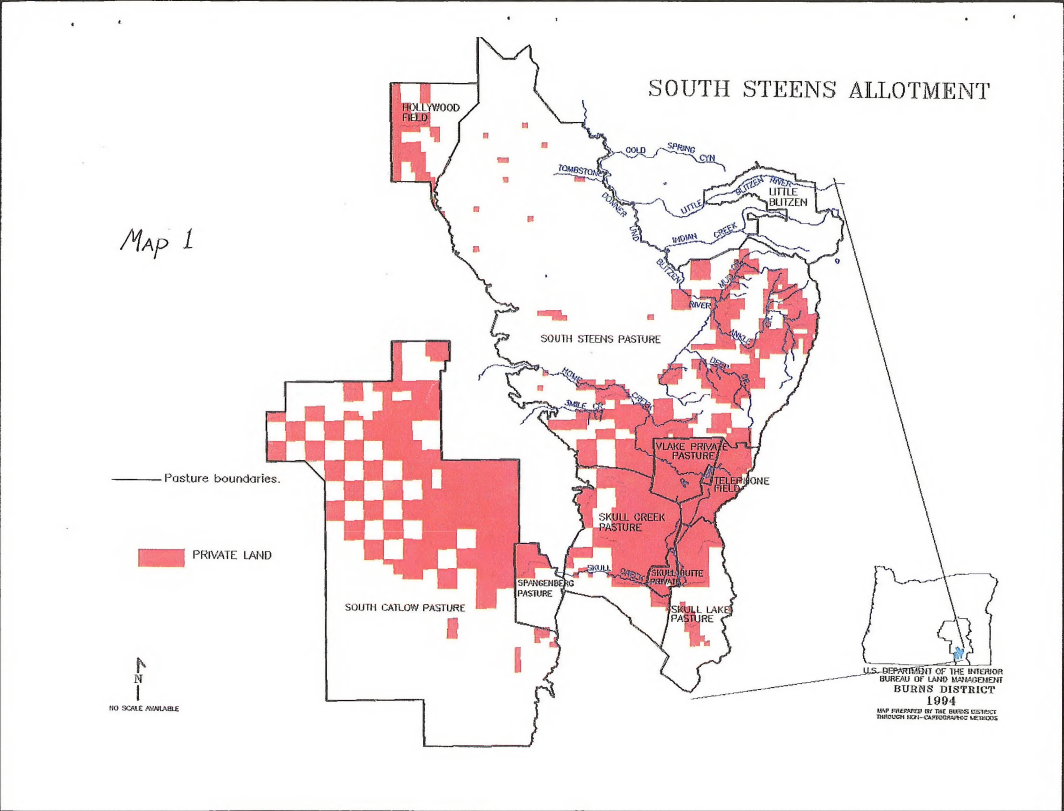
Approximately 98 percent of the private land within the allotment is owned by Roaring Springs Ranch, Inc., holder of the grazing permit for the South Steens Allotment. Roaring Springs Ranch, Inc., owns approximately 81.9 miles of riparian habitat within South Steens Allotment (Table 1). The bulk of Ankle Creek, Deep Creek, and Mud Creek, all tributaries to the South Fork of the Donner und Blitzen River, are on private land. Some of the headwater springs for the Donner und Blitzen River and 3.8 miles along the South Fork of the Donner und Blitzen River are in private ownership. The major portions of the headwaters of Home Creek, with approximately 4 miles along Home Creek, and nearly all of Skull Creek are also on private land (see Map 1).

TABLE 1

MILES OF RIPARIAN HABITAT WITHIN SOUTH STEENS ALLOTMENT OWNED BY ROARING SPRINGS RANCH, INC.*

STREAM	PRIVATE-MILES
Ankle Creek and tributaries	19.3
South Fork Blitzen River	3.8
Mud Creek and tributaries	7.0
Huffman Area - Unnamed tributaries	1.0
Deep Creek and tributaries	6.0
Three Mile Creek	.7
Home Creek	18.4
Six Mile Creek	2.5
Skull Creek (including Echart Creek)	23.2
TOTAL MILES	81.9

* Information for riparian stream miles on private property is based on data from USGS maps and taken from color infrared aerial photos. Springs, meadows, and small unnamed drainages flowing into Catlow Valley and streams west of the paved Catlow Valley Road are not included.


SOUTH STEENS ALLOTMENT
Map 1
HOLLYWOOD FIELD
COLD SPRING CYN
TOMBSTONE
PONDER CYN
LITTLE BLITZEN
LITTLE BLITZEN
INDIAN CREEK
BLITZEN
MUD
RIVER
WILD
SOUTH STEENS PASTURE
DEVIL
MONUMENT
SMILE OF
CREEK
VLAKE PRIVATE PASTURE
TELEPHONE FIELD
SKULL CREEK PASTURE
SKULL
CREEK
SKULL RUTTE PRIVATE
SPANGENBERG PASTURE
SOUTH CATLOW PASTURE
SKULL LAKE PASTURE
Pasture boundaries.
PRIVATE LAND
N
NO SCALE AVAILABLE
U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
BURNS DISTRICT
1994
MAP PREPARED BY THE BURNS DISTRICT THROUGH NON-CARTOGRAPHIC METHODS

There are 10 pastures within the South Steens Allotment, seven of which are mixed public and private ownership and three of which are entirely private or have less than 2 percent public lands (see Map 1) for pastures and ownership and Table 2 for acreage and ownership by pasture). The Little Blitzen Pasture is permanently closed to livestock grazing by rangeline agreement.

The largest pasture (South Steens) is 140,272 acres; approximately 113,643 acres are public land and 26,629 acres are private. The South Steens Pasture is the primary focus of management concerns because of its unique features, abundant resources, and need for improved management. This pasture ranges in elevation from approximately 4,600 feet to 9,335 feet, which results in diverse ecotypes (see Map 2 for Dominant Vegetation Zones).

TABLE 2

ACREAGE BY PASTURE AND OWNERSHIP

PASTURE	PUBLIC	PRIVATE	TOTAL
Hollywood Field	7,291	4,473	11,764
South Catlow	74,320	41,363	115,683
South Steens	113,643	26,629	140,272
Skull Creek	8,601	13,578	22,179
Skull Lake	9,273	4,642	13,915
Telephone Field	354	4,573	4,927
V Lake	5	5,712	5,717
Skull Butte Private**	48	1,453	1,501
Spangenberg	3,971	1,549	5,520
Little Blitzen	10,922	--	10,922
TOTALS	228,428	103,972	332,400

** Mostly private land fenced out of allotment

B. **Goals and Objectives**

Goals and objectives for management of the South Steens Allotment were developed in cooperation with the South Steens Work Group. These statements of goals and objectives are shown in Appendix B.

C. **Resource Information**

1. Vegetation

Vegetation in the lower elevations (below 5,000 feet) is dominated by associations of low sagebrush and western juniper communities with mixing of Wyoming big sagebrush communities on deeper soils. The juniper communities dominate the rockier sites and have an understory dominated

by Idaho fescue. These communities have spread into Wyoming big sagebrush and mountain big sagebrush/bunchgrass sites in many areas. The low sagebrush and Wyoming big sagebrush communities have understory species of Sandberg's bluegrass (which is dominant), squirreltail, Thurber's needlegrass, Idaho fescue, and various forbs.

At mid-elevations (above 5,000 feet) the same communities dominate with mountain big sagebrush replacing Wyoming big sagebrush and with squirreltail, Idaho fescue, and bluebunch wheatgrass becoming more frequent in the understory and Sandberg's bluegrass becoming a lesser component.

At the higher elevations (above 7,000 feet), mountain big sagebrush communities are common with associated species of serviceberry, snowberry, mountain brome, Idaho fescue, bluebunch wheatgrass, various needlegrasses, bluegrasses, lupines, Indian paintbrush, and various forbs.

Aspen communities are scattered throughout the higher elevations with similar understory to the mountain big sagebrush communities but with more species of forbs. Dominant vegetation associations in each pasture are shown on Map 2.

2. Special Status Species

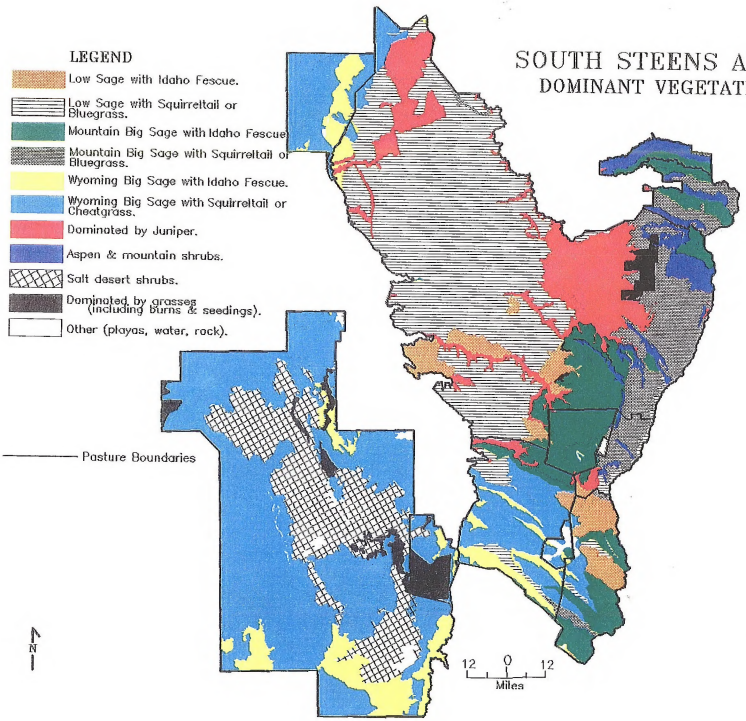
Castilleja pilosa var. *steenensis*, Steens Mountain paintbrush, a federal Category 2* candidate plant species for listing as Threatened or Endangered (T&E), is located on the higher elevation windswept ridges within the South Steens and Little Blitzen Pastures.

Migratory bald eagles (Threatened) and American peregrine falcons (Endangered) fly over the area. Low numbers of bald eagles may be present during the winter. Peregrine falcons have been observed near the mouth of Home Creek Canyon during the spring, but no eyries have been found. Garrison Lakes and adjacent playa wetlands in Catlow Valley provide habitat for migrant white-faced ibis, a federal Category 2 species.

The allotment is habitat for California bighorn sheep (a Category 2 species). The Alvord Peak Area of Critical Environmental Concern (ACEC) within the Skull Lake Pasture has been created for bighorn sheep (see Map 5 for ACECs and Research Natural Areas (RNAs).) Bighorn sheep are also located along the Catlow Rim between Dry Creek and Echart Creek within the South Steens Pasture. An estimated 100 bighorns graze yearlong along Catlow Rim and another 80 use the Alvord Peak area in the summer. During open winters, bighorns winter near Alvord Peak.

* Category 2 candidate species are those taxa for which the U.S. Fish and Wildlife Service (USFWS) has information to indicate listing as Threatened or Endangered is possibly appropriate. Additional information is being collected.

SOUTH STEENS ALLOTMENT
DOMINANT VEGETATION ZONES


LEGEND
Low Sage with Idaho Fescue.
Low Sage with Squirreltail or Bluegrass.
Mountain Big Sage with Idaho Fescue
Mountain Big Sage with Squirreltail or Bluegrass.
Wyoming Big Sage with Idaho Fescue.
Wyoming Big Sage with Squirreltail or Cheatgrass.
Dominated by Juniper.
Aspen & mountain shrubs.
Salt desert shrubs.
Dominated by grasses (including burns & seedings).
Other (playas, water, rock).
Pasture Boundaries
N
12 0 12
Miles

MAP 2

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
BURNS DISTRICT
1994
MAP PREPARED BY THE BURNS DISTRICT
BRUSH NON-CARTOGRAPHIC METHODS

Bighorn sheep move between these areas and also range south from Catlow Rim and north and east of Alvord Peak. In addition, bighorns present between Alvord Peak and Wildhorse Canyon range into the allotment along the edge of the Alvord Valley Rim.

Historic bighorn sheep habitat in the lower Blitzen River Canyon, Little Blitzen Gorge, Big Indian Gorge, and the Little Indian Gorge has been proposed for reintroduction of bighorn by Oregon Department of Fish and Wildlife (ODFW).

The South Steens Allotment provides critical habitat for sage grouse, a Category 2 species. Strutting grounds (leks), where courtship and breeding occurs, are common in the lower to mid-elevations of the South Steens Pasture. Eight leks have been located on public lands and five on private property in the allotment. Much of the nesting occurs in big sagebrush cover within 2 miles of a lek and at upper elevations. Many sage grouse move to upper elevations with their broods while others summer near leks.

Ferruginous hawk and northern goshawk, both Category 2 species, also breed in the juniper woodland and aspen parts of the allotment. Swainson's hawk, a BLM sensitive species, is found in the allotment but no nests have been located.

The Donner und Blitzen River system provides habitat for redband trout and the Malheur mottled sculpin, both Category 2 federal candidate species. Redband trout have been split into four candidate groupings by the USFWS and two of these are present in the allotment. The Catlow redband trout occurs in Skull Creek, Three Mile Creek, and Home Creek. The inland redband trout is found in the Donner und Blitzen River drainage, including its tributaries. Redband trout utilize even the smallest perennial streams with fish often present up to spring sources. Data on the quality of aquatic habitat for most of the Donner und Blitzen River and its tributaries are based on inventories completed in 1991 and 1994 (see Appendix A). The Malheur mottled sculpin is found in the Malheur Lake Basin including the Donner und Blitzen River and its tributaries, but has not been found in Catlow Valley streams.

Significant portions of many streams have degraded trout habitat as exhibited by a lack of woody riparian cover, unprotected streambanks, and poor instream structure due to sedimentation. The absence of large riparian woody species allows sunlight to increase water temperatures during the heat of the summer and decreases the opportunity to trap sediment and reduce peak flows. Erosion has deteriorated undercut banks which provide shade for fish. Sedimentation has covered spawning gravel and degrades foraging habitat.

High water temperatures, a lack of shade, and organic enrichment from cattle and horses contribute to a large volume of filamentous algae in the water of several streams, notably Home Creek. This all adds up to a reduced macroinvertebrate production and diversity and poor water quality during the summer.

Another federal Category 2 fish species is the Catlow tui chub, a small fish present in Skull Creek, Three Mile Creek, Home Creek, North Catlow Ditch, Skull Creek Reservoir (private), and in streams on private property outside of the allotment. This subspecies is endemic to Catlow Valley.

Other special status species that may be present in the allotment are shown in Appendix C.

3. Wildlife

Mule deer summer and winter in the allotment. However, most deer summering in the allotment winter to the north and east. Upper elevations provide good deer summer range with a good interspersion of water, foraging areas, and thermal and hiding cover. Some deer graze in Catlow Valley hayfields in the summer and fall and use nearby uplands as loafing areas.

Antelope graze the more open parts of Steens Mountain and in the vicinity of the open playa lakebeds near Garrison Lakes in summer. Late fall snows force antelope off the Steens into Catlow Valley.

Rocky Mountain elk are not abundant but are summer residents found at the mid and upper elevations. Some elk use continues on Steens Mountain during open winters.

Upland game birds found in the allotment include mourning dove during spring and summer and valley quail near brushy drainages yearlong. Chukars are abundant near rocky rims at lower elevations along Catlow Valley and near Alvord Peak throughout the year. Common snipe inhabit areas around springs, wet meadows, and riparian areas.

The Catlow Valley Rim provides as dense a breeding population of golden eagles as anywhere in the western United States, with usually 11 to 12 active eyries along 25 miles of the rim. Prairie falcons, red-tailed hawks, kestrels, great horned owls, and other raptors also nest along Catlow Rim. Coyote Rim, on the west side of Catlow Valley, also has a concentrated golden eagle nesting population.

The pika is found in talus slides in the headwaters of the Little Blitzen, Big Indian, and Little Indian Gorges. Riparian areas provide habitat for over 150 nongame animal species and are important migratory paths for neotropical birds. Beaver are present in streams providing instream structure through construction of dams which collect sediment. Beaver also reduce shrub and tree canopy by cutting woody species for feed and for dam construction.

Garrison Lakes and adjacent playas in Catlow Valley, cover 350 acres at high water and are 80 percent private property (Roaring Springs Ranch, Inc.). This area is used by breeding and migratory aquatic birds and a wide variety of shorebirds. Breeding waterfowl are primarily Canada geese and dabbling ducks. Aquatic vegetation is primarily submergent with a low cover of rushes, sedges, and grass along the shoreline. Two hundred acres of North Catlow Wetlands, whose water source is excess irrigation water from

Roaring Springs, are used primarily by migrant dabbling ducks and Canada geese. Skull Creek Reservoir produces up to 40 Canada geese goslings annually.

Fish species present in the Blitzen River drainage are long-nosed dace and mountain whitefish. Mountain whitefish are scarce in this particular area and are found in larger streams. These two species are absent from the Catlow Valley streams.

4. Riparian and Wetland

The 55.5 miles of riparian habitat on public lands is in a variety of habitat conditions with 11.5 miles (20.7 percent) in poor condition, 11.9 miles (21.4 percent) in fair condition, 23.6 miles (42 percent) in good condition, and 8.5 miles (15.3 percent) in excellent condition (Table 3). Much of the habitat in good or excellent condition is in rugged, rocky country inaccessible to most grazing animals.

TABLE 3

SOUTH STEENS ALLOTMENT
Public Land Riparian Condition (Miles)

STREAM	POOR	FAIR	GOOD	EXCELLENT	TOTAL
Blitzen River			1.8	4.7	6.5
South Fork Blitzen River	2.1	5.9	4.6		12.6
Little Blitzen River		2.5	9.1		11.6
Mud Creek			.4		.4
Ankle Creek	1.1	1.2			2.3
Deep Creek		1.6	.2		1.8
Tombstone Canyon		.4			.4
Home Creek	5.2	.3		2.3	7.8
Three Mile Creek	1.4		2.2		3.6
Skull Creek	1.7				1.7
Big Indian Creek			3.8		3.8
Little Indian Creek			1.5	1.5	3.0
Total	11.5	11.9	23.6	8.5	55.5

Wetlands are primarily on private property belonging to Roaring Springs Ranch, Inc., below (west of) Catlow Rim (see Table 4 and Map 3). However, North Catlow Wetlands is 80 percent public land at high water. The lake on Skull Creek and adjacent wetlands are all on private land.

TABLE 4

WETLANDS IN SOUTH STEENS ALLOTMENT

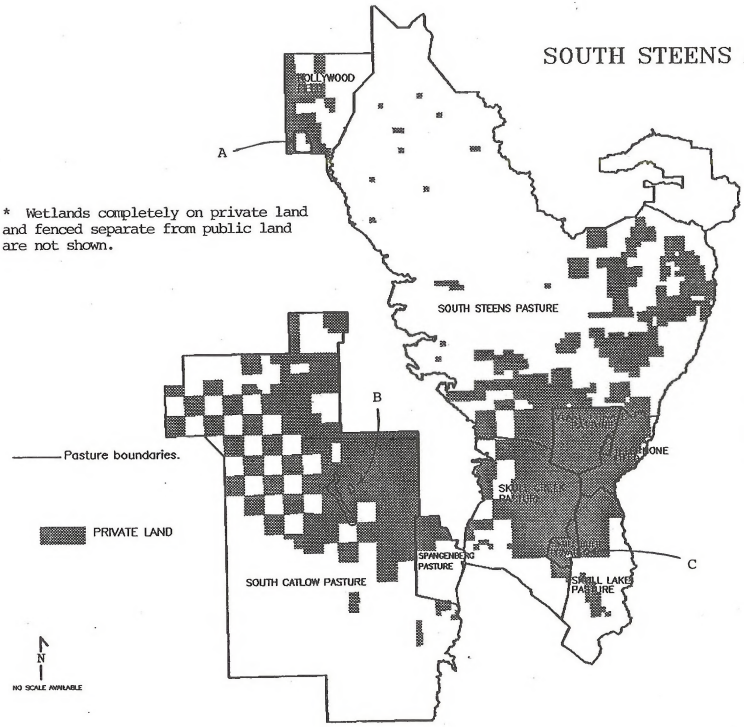
Land Status	Wetland	Acres
Private Property		
	Garrison Lakes	260
	North Catlow	43
	V Lake	30
	Skull Lake Meadows	140
	Total Private	473
Public Land		
	Garrison Lakes and nearby area	49
	North Catlow	160
	Total Public	209

5. Water Quality and Quantity

Headwater streams in the allotment are small, with low flows commonly less than 7 cubic feet/second (cfs) by September, but with peak flows exceeding 30 cfs during spring runoff. The mainstem of the Donner und Blitzen River in the northernmost part of the allotment is the largest stream with peak flows often exceeding 800 cfs and low flows of less than 40 cfs (Burns District Files; Water Resources Data for Oregon - Water Years 1978 to present, U.S. Geological Survey, Water Data Annual Reports). The drainage area of the Donner und Blitzen River above Page Springs is 128,692 acres, while the drainages of its named tributaries range from 1,725 acres for Little Indian Creek to 13,545 acres for Ankle Creek. The major streams that are outside of the Donner und Blitzen system have relatively small drainages of 6,400 acres for Three-Mile Creek, 19,843 acres for Home Creek, and 30,007 acres for Skull Creek. Except for the Little Blitzen River, the tributaries to the Donner und Blitzen River and streams flowing into Catlow Valley are almost entirely within the South Steens Allotment.

Peak flows for these systems occur during spring run-off. Although base flows are maintained by springs, the duration of adequate flow for fish species is related to the capability of the riparian areas to store water during spring infiltration and releasing it later in the year. The past downcutting of the streams, evidenced by vertical cut banks, has resulted in a lowered water table, which in turn has reduced the ability of the meadows and the streamside riparian areas to hold water for later release. Recovery of the original level of the water table would probably not occur within the foreseeable future; however, the potential exists for the formation of streambanks in the bottom of present channels in low to moderate gradient reaches, which would improve water storage capacity of the system. Currently these streambanks are not developing, as evidenced

SOUTH STEENS ALLOTMENT



* Wetlands completely on private land and fenced separate from public land are not shown.

Pasture boundaries.

PRIVATE LAND

WETLANDS

A North Catlow Wetland

B Garrison Lakes

C Skull Lake

MAP 3

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
BURNS DISTRICT
1994
MAP PREPARED BY THE BURNS DISTRICT THROUGH NON-CARTOGRAPHIC METHODS

by the low amount of undercut banks and the current wetted width of the channel in the low to moderate gradient reaches. Establishment of streambanks would also result in a narrower, deeper, and more meandering channel within the bottom of the present downcut channel, allowing for more dissipation of energy and capture of sediments for further streambank development.

Water quality varies greatly from stream to stream and even within streams depending on topography, elevation, proximity to spring sources, riparian condition, and other factors. A discussion of physical and chemical water quality parameters evaluated over many years, plus the results of macroinvertebrate analysis, are given in Appendix D.

In general, maximum daily water temperatures are at or higher than the DEQ water quality criteria (68°F) for streams that contain trout species. Portions of Deep Creek, Ankle Creek, Home Creek, and Skull Creek have high water temperatures, which can affect the growth rate of fish. High temperatures also reduce oxygen solubility, resulting in less dissolved oxygen available for fish species. Dissolved oxygen assessments indicate that levels are within the range recommended for redband trout; however, they are low relative to the needs of the fish at the higher water temperatures.

Sedimentation of stream bottoms is also a problem for fish species in portions of all streams except Three-Mile Creek. Excessive suspended sediment in a system causes high turbidity, which is detrimental to visual feeding fish, such as trout and sculpin. When these fine particle-size sediments deposit in excessive amounts in low velocity areas, they can also be detrimental to fish by covering streambed gravel with silt and thereby changing or possibly reducing the macroinvertebrate community. Deposition of fine particles can also cause a reduction in water circulation around fish eggs during the incubation period, decreasing the dissolved oxygen that is available to the eggs and impeding the removal of wastes that are produced by the developing embryos (Bjornn and Reiser 1991).

Other water quality parameters are also at or below minimum needs of the aquatic community. Relative to the optimal aquatic community, total dissolved solids are too low and nitrate and nitrogen levels are too high. The pH level is at the high end of the range considered good for fish production. Sulphate levels are adequate.

Water sampling of most streams in the South Steens Allotment is made difficult due to poor road access. From November through April, vehicle access is usually limited due to mud or snow. However, BLM has sampled some streams during this period using a helicopter for access. In addition to water sampling, the collection and analysis of macroinvertebrates present in streams may provide valuable clues for determining water quality. A discussion of physical and chemical water quality parameters evaluated over many years, plus the results of macroinvertebrate analysis, are shown in Appendix D.

Water quality data needs to be collected from additional locations and at more frequent intervals, to develop an accurate picture of water quality for the Donner und Blitzen River and its tributaries. Factors which contribute to variability of data are depth of snow pack, volume and timing of runoff, watershed saturation or dryness, and, season of year.

6. Special Management Areas

a. Wilderness Study Areas

The South Steens Allotment contains all or portions of eight Wilderness Study Areas (WSA). They are listed in Table 5 by name, number, pasture, and the President's recommendation to Congress for designation as wilderness (see Map 4). Recommendation for wilderness designation is based on the findings of the Final Oregon Environmental Impact Statement, Volumes I through IV, December 1989 (BLM-OR-ES-90-8-8561.6). Further information is provided in the Oregon Wilderness Study Report, Volume I, October 1991 (BLM-OR-EA-91-43-8561.6).

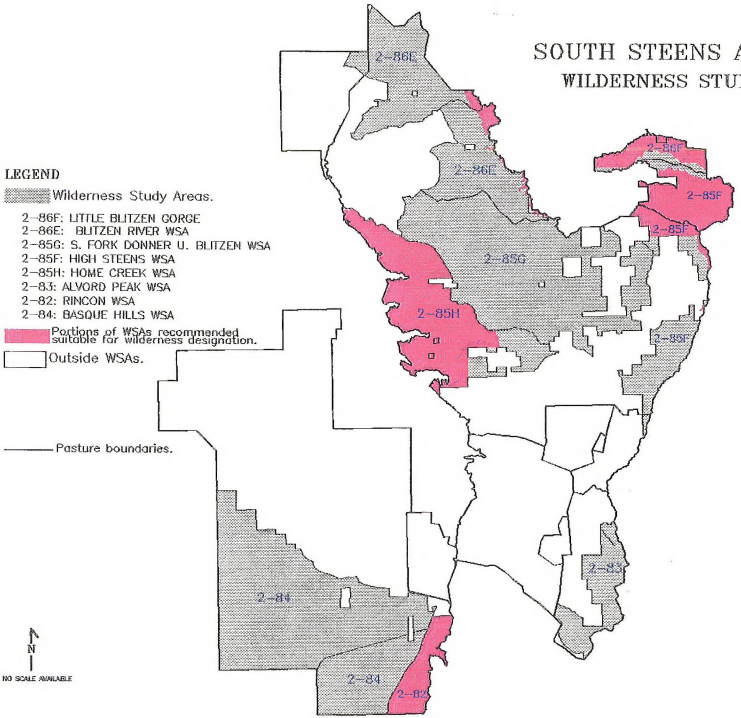
These WSAs are managed under BLM Interim Management Policy which directs the agency to manage WSAs to protect or enhance their wilderness values until Congress has made a final determination of what will be wilderness and what areas will be released from further wilderness consideration.

TABLE 5

WILDERNESS STUDY AREAS

WSA Name	Number	Pasture	Recommendation
Home Creek	2-85H	South Steens	All 17,287 acres
Blitzen River	2-86E	South Steens	Part - 1,199 acres
South Fork of the Donner und Blitzen	2-85G		No
Little Blitzen Gorge	2-86F	Blitzen Gorge	All - 3,072 acres
High Steens	2-85F	South Steens	Part - 8,244 acres
Alvord Peak	2-83	Skull Lake	No
Basque Hills	2-84	South Catlow	No
Rincon	2-82	South Catlow	Part - 4,464 acres

SOUTH STEENS ALLOTMENT
WILDERNESS STUDY AREAS



MAP 4

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
BURNS DISTRICT
1994
MAP PREPARED BY THE BURNS DISTRICT THROUGH NON-CARTOGRAPHIC METHODS

The portions of Home Creek, Blitzen River, the South Fork of the Donner und Blitzen River, Little Blitzen Gorge, High Steens, Alvord Peak, Basque Hills, and Rincon WSAs, recommended for wilderness, contain unique and exceptional wilderness values of varying degrees. They are all in a relatively natural condition. There are few developments within the WSAs and their effect, as well as the influence from outside developments, is minimal. Developments are mainly for livestock management and include ways, trails, fences, reservoirs, spring improvements, corrals, and cabins. Most developments are screened by topography or vegetation and are not substantially noticeable, being seen from only a very small portion of a WSA.

All recommended portions of WSAs offer outstanding opportunities for solitude and most offer excellent primitive and unconfined recreation. These opportunities are enhanced by topographic or vegetative screening. Recreation opportunities include day hiking, camping, backpacking, horseback riding, hunting, fishing, observing wildlife, sightseeing and photography. A detailed description of each WSA is given in Volume III of the Final Oregon Wilderness EIS, 1989.

b. Areas of Critical Environmental Concern (ACEC)

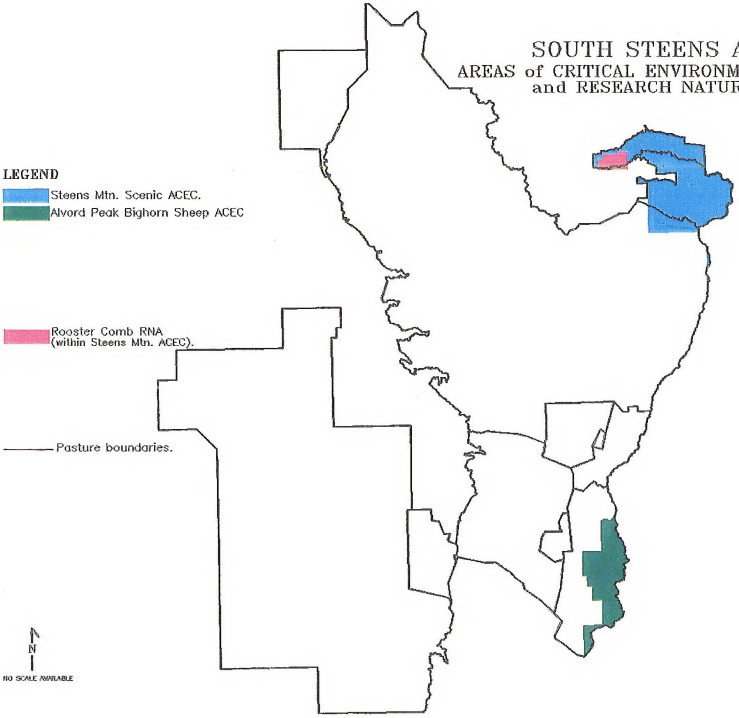
Part of the Steens Mountain Scenic ACEC is found within the Little Blitzen and South Steens Pastures. This ACEC was designated to protect the outstanding scenic qualities of this portion of Steens Mountain. The Alvord Peak Bighorn Sheep ACEC was designated to protect bighorn sheep range.

The Rooster Comb RNA is within the Blitzen Gorge Pasture of the South Steens Allotment. It was designated to protect the black cottonwood riparian and mountain mahogany plant communities. It also serves to provide for research and education about this unique habitat (see Map 5 for the locations of Rooster Comb RNA/ACEC and the Steens Mountain Scenic ACEC).

c. Wild Horses

The South Steens Allotment is within the South Steens Wild Horse Herd Management Area (HMA). This HMA also contains portions of Frazier Field, Lavoy Tables, Wild Horse, Miners Field and, Carlson Creek Allotments. It is approximately 204,568 acres of which 151,144 acres are occupied by horse bands. Most of the active horse herd area is found in the South Steens Pasture of the South Steens Allotment. The HMA is managed at an appropriate management level of between 159 and 304 horses. An updated Herd Management Area Plan (HMAP) has been completed (see Appendix E).

SOUTH STEENS ALLOTMENT
AREAS of CRITICAL ENVIRONMENTAL CONCERN and RESEARCH NATURAL AREA



MAP 5

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
BURNS DISTRICT
1994
MAP PREPARED BY THE BURNS DISTRICT THROUGH NON-CARTOGRAPHIC METHODS

7. Juniper Invasion

Due to man's interruption of the natural frequency of fires and past grazing practices, along with possible changes in the climate, western juniper has encroached on much of the mid-elevations of the South Steens Allotment (Mehringer and Winyard, 1990; Johnsen, 1962; Burkhardt, J.W. and Tisdale, E.W. 1976; Shinn, D.A., 1980). As these trees increase in size and density, plant diversity declines. Such plants as aspen, mountain big sagebrush, snowberry, serviceberry, bitterbrush, Idaho fescue, bluebunch wheatgrass, Thurber's needlegrass, various lupines, and Indian paintbrush are reduced in number. (Burkhardt, J.W. and Tisdale, E.W. 1976).

8. Grazing History

In 1959, livestock stocking level and season of use were set by the Frenchglen adjudication which did not describe the number of animals by season of use. The preference was set at 21,926 AUMs. There were 729 AUMs withdrawn from active preference in 1989 when the Bureau of Land Management (BLM) acquired the Wildhorse base property. The active preference for the allotment today is 21,197 AUMs, which is licensed at 60 percent Federal range because of the unfenced private lands within the allotment boundaries. There are 14,381 AUMs accredited to unfenced private land for a total of 35,578 AUMs for livestock use within the allotment. The Andrews Grazing Management Program Final Environmental Impact Statement (FEIS) allocated 708 AUMs for wildlife and also set the number of AUMs available for wild horses (see Appendix E).

The current grazing permit allows for approximately 4,000 cows with calves from April 1 through October 31 and 1,885 cattle November 15 to March 15. The entire permitted AUMs and AUMs accredited to private land are controlled by Roaring Springs Ranch, Inc. Subsequent to the adjudication, few changes in livestock management are documented during the 1960's, 1970's, and 1980's. Some pasture fencing was completed by the ranch in the 1980's, allowing periodic rest and changing the timing of grazing in some pastures. The South Catlow Pasture was changed to winter use during the 1980's. The South Steens Pasture has no complete interior fencing. Herding and salting locations have been methods used to control livestock distribution, but the rough topography and vast area (240 square miles) has made it marginally successful.

In the past (1991 and earlier), when the allotment was grazed with full permitted livestock numbers, monitoring studies indicated heavy to severe utilization in riparian zones accessible to livestock, with only slight to light use on most of the uplands. Some upland sites have received heavy utilization.

Between the years of 1976-1992, at different times, six different livestock operations controlled the base property and grazing permit on the South Steens Allotment. The allotment was in nonuse during the years 1987-1988 and 1992. In August of 1992, Roaring Springs Ranch, Inc., assumed control of the base property and permit. In 1993, 900 cattle grazed the South Steens Allotment during the season

of use and more than 300 wild horses grazed yearlong (BLM rangeland monitoring studies). Rangeland ecological status by seral stage* for the total allotment is shown in Table 6.

TABLE 6
ECOLOGICAL STATUS

Seral Stage	Acres
Early seral	41,081
Mid-seral	183,725
Late seral	77,707
Potential Natural Community (PNC)	4,473
Unclassified	25,649

Rangeland ecological status by pasture is shown in Appendix F and existing seral stages are shown in Map 6.

D. **Planning History**

The Andrews Grazing Management Program FEIS was completed in February 1983. The subsequent Rangeland Program Summary (RPS) was completed in May 1984 and outlined a deferred rotation grazing system with the South Catlow Pasture as winter use only. The completion of the RPS in 1984 started a 5-year rangeland monitoring period at the end of which current management would be evaluated. These documents also outlined proposed management and rangeland structural and vegetation treatment projects. Included were 41 miles of fence, 1 cattleguard, 16 miles of pipeline, 4 wells, 4 reservoirs, two 18,000-gallon and six 10,000-gallon water tanks and, 20,520 acres of brush control/seeding.

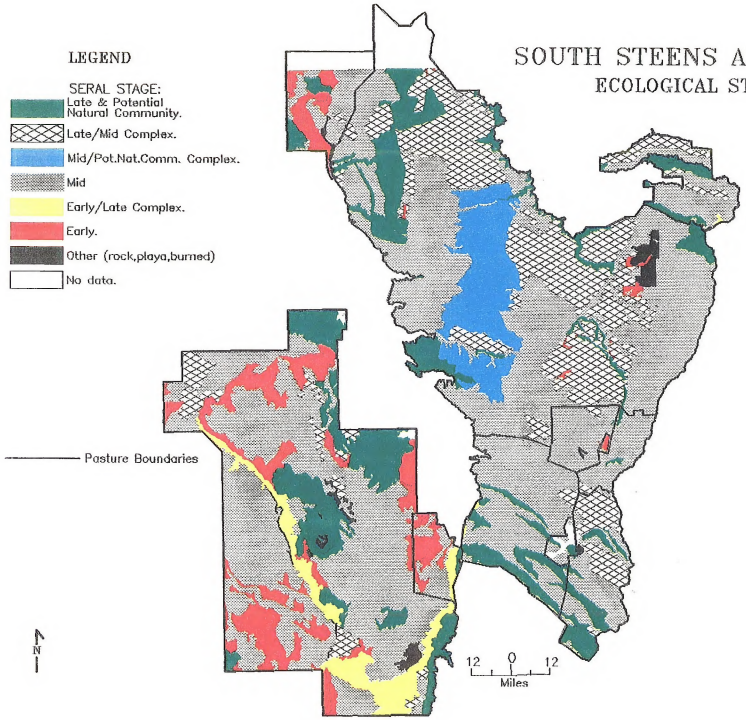
The allotment was placed in an "Improve" management category and rated as number 6 in priority within the Andrews Resource Area for management actions, rangeland structural projects, and vegetation treatment implementation. The allotment was placed in the "Improve" management category for the following reasons:

1. Unsatisfactory range conditions, specifically riparian condition.
2. Forage production potential was moderate to high and present production was low to moderate.
3. Existing management was unsatisfactory.
4. Serious resource conflicts and controversy existed.
5. There were opportunities for positive economic returns.

The initial rangeland evaluation of monitoring studies was completed in 1989.

* Seral stages are the developing, temporary plant communities which follow each other through time in response to changes in their environment.

SOUTH STEENS ALLOTMENT
ECOLOGICAL STATUS



MAP 6

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
BURNS DISTRICT
1994
MAP PREPARED BY THE BURNS DISTRICT THROUGH NON-CARTOGRAPHIC METHODS

The Wild Horse HMAP for South Steens HMA was amended by the Andrews Management Framework Plan (MFP) of 1982 and the RPS of 1984 which changed the boundary of the South Steens active HMA to exclude portions of the South Steens, Andrews, and Wildhorse Canyon Allotments. The horses were excluded from those areas because of competition for water and forage with bighorn sheep. By removing horses from those areas, approximately 53,424 acres are considered to be inactive within the South Steens HMA. The remaining portion of the South Steens Allotment and three pastures in the Frazier Field Allotment are considered to be the active HMA of 151,144 acres (see Map 7 showing active and inactive HMA boundaries and Table 7 showing HMA by ownership). The wild horse minimum and maximum numbers are currently 159 to 304 head.

TABLE 7

SOUTH STEENS WILD HORSE HERD MANAGEMENT (active) AREA ACREAGE

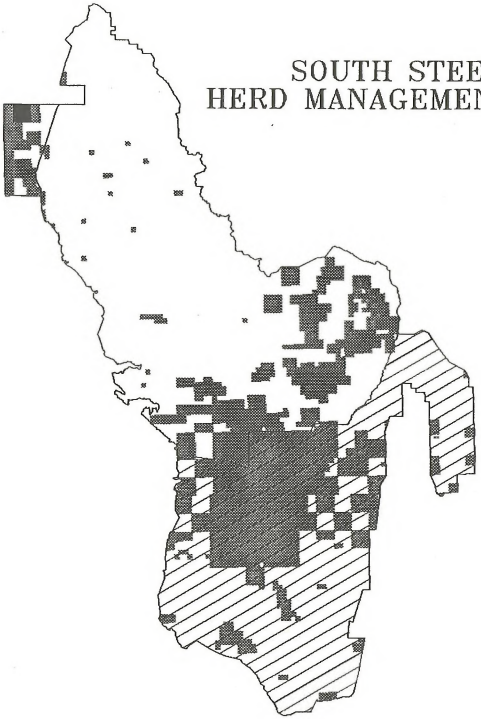
Land Status	Acres
Private	30,517
State	663
Public	119,964
Total	151,144

E. **Alternatives Considered But Not Analyzed**

Five alternatives were considered during this EA process but were dismissed from further analysis for reasons described below. One was to implement a rotational grazing system similar to Alternative II, using electronic livestock control and herding. Livestock would be equipped with special ear tags that contain radio receivers which trigger an electric shock when the animals approach an "electronic fence" consisting of a series of local transmitters that form the boundary of an area where livestock are to be excluded. This system is still in the experimental stage, but could be available within 3 years. If it proves to be affordable, it could be used to restrict livestock from portions of critical riparian zones.

A second alternative would implement a rotational grazing system similar to that described in the initial South Steens Work Group proposal with the use of the New Zealand electric or other temporary fencing. The rough topography, length of fences, and limited access would restrict the use of electric fence. Electric fences can be shorted out when the wires come in contact with rocks or vegetation and would be difficult to maintain in rough terrain. The remoteness of the area would make setting up, breaking down, and monitoring the fence time-consuming and cost prohibitive. Temporary fencing could only be used in certain critical areas with very little slope for distances up to approximately 1.5 miles. For these reasons, temporary fencing was not analyzed further.

SOUTH STEENS HERD MANAGEMENT AREA



LEGEND

- ACTIVE AREA
- INACTIVE AREA
- PRIVATE LAND
- STATE LAND
- BLM LAND

N

NO SCALE AVAILABLE

MAP 7

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
BURNS DISTRICT
1994

MAP PREPARED BY THE BURNS DISTRICT THROUGH NON-CARTOGRAPHIC METHODS

Third, was the removal of livestock access to the river corridor to protect the Wild and Scenic River. This would require fencing both east and west sides of the river corridor along the South Fork of the Blitzen (approximately 12 miles of fence). It would also require fencing the 3.5 miles of Roaring Springs Ranch, Inc., private land within the corridor. The length of fence required to accomplish this would be at least 12 miles within the South Fork of the Donner und Blitzen River WSA. This amount of fence would not be in conformance with Interim Management Policy for WSAs; therefore, this proposal was dismissed from further analysis.

The fourth alternative considered was a proposal submitted by the Roaring Springs Ranch, Inc. It would use riders to distribute the cattle. Livestock use would start on the north end of the allotment and move south each year. Riders would distribute cattle in the uplands and animals grazing in the same areas each year would develop a "home range." Riders would control utilization levels by ensuring livestock were scattered over all of the rangeland and moved out of riparian areas. The use of riders would eliminate the need for extensive fencing. The season of use would remain at April 1 to October 31 for South Steens Pasture.

The Skull Creek and Skull Lake Pastures would be grazed after seed have ripened each year. The Spangenberg Pasture (Skull Creek Seeding) would be cropped twice each year, spring and fall. The private Telephone Field and V Lake Pastures would be grazed during the summer each year. The South Catlow Pasture would be grazed each winter. Timing of livestock movement would occur when a set level of utilization had been reached. This alternative would have no structural improvements with the possible exception of gap fencing where needed. Grazing capacity would be above 35,578 AUMs, based on the livestock recommendations in the Andrews Grazing Management Program Draft Environmental Impact Statement (DEIS). The ranch's plan also called for the reintroduction of fire into the ecosystem with a minimum of 1,500 acres of former grassland invaded by juniper being burned (prescribed) each year. The Roaring Springs Ranch Proposed Grazing Management Plan is on file in the Burns District office.

Portions of this alternative were adopted by the BLM inter-disciplinary team and incorporated into the proposed action. The remainder of this alternative was dismissed because it did not address plant physiology requirements and would require continuous grazing during critical growth periods in much of the allotment. To the extent fences would not be built, this alternative would not impair visual resource values and the key wilderness characteristic of naturalness would be maintained. Improvement in upland and riparian vegetative conditions would be slowed because of the lack of rest from grazing during the growing season.

The fifth alternative considered was no livestock grazing in the South Steens Pasture. This alternative was recommended by participants in a 1992 public meeting with environmental groups in Portland. This alternative was dropped because it did not consider the total ecosystem. Much of the critical riparian areas within the allotment (such as tributaries to and portions of the Donner und Blitzen River as well as much of Home Creek, Three Mile Creek, and Skull Creek) are owned by Roaring Springs Ranch, Inc., and these areas would continue to be grazed by livestock. This alternative was also dismissed because it is not in conformance

with the Taylor Grazing Act, or Federal Land Policy and Management Act (FLPMA).

II. DESCRIPTION OF THE PROPOSED ACTION

A. General Discussion

The proposed action would be to implement an adaptive rotational grazing system to provide periodic rest in critical areas, change timing of grazing, shorten the season of use in critical areas, and employ target utilization levels in riparian and upland zones. This alternative was developed to meet the goals and management objectives designed by the South Steens Work Group for the South Steens Allotment (see Appendix B). Determinations of whether or not the proposed management is meeting objectives would be based on the evaluation of the results of rangeland monitoring studies described in the South Steens Monitoring Plan (see Appendix G).

Under this proposed action the Wild Horse HMAP for South Steens would be as described in the revised South Steens HMAP found in Appendix E. In general, wild horses would be managed as follows:

The wild horse herd would be managed at the appropriate management level of between 159 to 304 animals to maintain a thriving ecological balance within the HMA. This would provide for a maximum of 3,648 AUMs for wild horses within the South Steens HMA. Forage and water would be managed to provide quality habitat for wild horses. The herd would be managed to maintain a healthy age structure and sex ratio, good conformation, and historical colors.

The South Steens Monitoring Plan, Appendix G, outlines data which would be collected to manage the wild horse herd. It is expected that wild horses would be gathered every 3 to 4 years to maintain a thriving ecological balance and to manage for a sustainable ecosystem. Frequency of gathering horses from the HMA would be determined by rangeland monitoring studies.

Under this proposed action, bands of wild horses, determined by rangeland monitoring studies to be negatively impacting riparian areas, the Wild and Scenic River Corridor or other sensitive areas would be gathered or relocated. Temporary fencing and/or gap fencing would be used to control livestock and wild horse access to portions of critical riparian zones. Areas targeted for this treatment are Lower Home Creek and upper Three Mile Creek which would require initial rest from grazing to provide recovery (see Map 1).

Those portions of Little Blitzen Pasture, managed as a nonuse pasture for livestock by rangeline agreement (Little Blitzen Gorge, Big Indian Gorge), would be withdrawn from the South Steens Allotment and be designated as not allocated for livestock use. The boundary of South Steens Allotment in this area would be adjusted to be the northern rim of Little Indian Gorge as shown on Map 1.

Little Indian Gorge could also be removed from grazing with the construction of 2.5 miles of fencing within the High Steens WSA.

B. **Grazing Schedule**

The general schedule of adaptive rotational grazing would start livestock grazing from the south end of the allotment for 2 years. The cattle would summer on the upper elevation pastures and would move off the allotment in early fall via the southern pastures. During the next 2 years, cattle would be started on the north end of the allotment and move south, being brought off the allotment via the southern pastures. The South Catlow Pasture would be grazed during the winter each year. The initial stocking level would be dependent on the previous year's monitoring results. It would be at or below the 21,197 AUMs of livestock permitted for the South Steens Allotment.

Grazing management depends heavily on the effectiveness of riders distributing cattle and ensuring cattle are moved out of riparian zones to uplands. This will be the main tool used to control utilization levels within pastures. This plan is designed to meet the physiological requirements of key plant species by controlling intensity and timing of grazing as well as providing periodic rest and deferment.

Management must be adaptive with consideration given to past seasons' monitoring results as well as preseason monitoring and current climatic conditions, such as drought, and availability of water. The annual prescription for grazing will be determined during the annual coordination meeting, between BLM and the permittee, held before grazing begins each spring. This may result in stocking level changes, pasture rotation changes, timing of grazing changes or other modifications of the general schedule to attain utilization target levels and to achieve management objectives. All changes and/or modifications to the general schedule and the annual operating plan would be documented in the BLM allotment file.

The following are examples and not all inclusive of annual operating prescriptions which may be applicable:

General Schedule - Begin Grazing from the North

Dry Conditions: Lighter stocking levels; accelerated moves of livestock; livestock could be moved out of Low Steens earlier than usual (June 15); access from Roaring Springs Canyon, Dry Creek; consideration to starting on south may be given; use current monitoring data with climate and last season's monitoring.

Wet Conditions: Increase stocking levels; livestock use may be extended on north Steens; longer season in Low Steens; Penland Pasture may be rested during this type of year; use current monitoring data with climate and last season's monitoring.

Normal Conditions: Projected schedule with any modifications required by current monitoring and previous season's monitoring results.

General Schedule - Begin Grazing from the South

Dry Conditions: Lighter stocking levels; accelerated livestock moves depending on severity may return to base early; use current monitoring with climate and last season's monitoring.

Wet Conditions: May start cattle on north; livestock moves may be lessened depending on plant phenology and utilization levels; use current monitoring data with climate and last season's monitoring.

Normal Conditions: Projected schedule with any modifications required by current monitoring and previous season's monitoring results.

Specific Requirements of Plan: Target utilization levels of 45 percent average of annual growth on herbaceous species and 20 percent on woody species will be managed in riparian zones to ensure health of riparian vegetation. Target utilization levels on herbaceous species would not be implemented on areas in the Penland Pasture on Year 1 under the early graze treatment (see next page). Only the Penland Pasture has an early graze treatment in Year 1. The early graze treatment would provide for an adequate regrowth period following grazing. Dates of the early graze treatment are dependent on climate and elevation, generally April, May, and June. When the target level of utilization is attained, livestock would be moved to an area where they can no longer access the segment of riparian zone which has been grazed to target levels. Wild horses, identified through monitoring studies, exceeding target utilization levels in riparian areas would be gathered or relocated. Temporary fencing and gap fencing would also be used to control access to these areas.

Livestock would be distributed in a manner to exclude use on Lower Home Creek (above Catlow Rim to Upper Crossing) and Three Mile Creek. Riders would remove occasional drift cattle from these riparian zones. These riparian areas would be incorporated into the grazing plan only after rangeland monitoring studies show adequate recovery. Effectiveness of recovery of these riparian areas would be determined during annual operating plan formulation and formal evaluation following one cycle (4 years) of this grazing plan. Temporary and/or gap fencing would be employed immediately to control some access of wild horses and livestock to these riparian zones.

The following table shows the general schedule grazing treatments by pasture. A more detailed written description of the grazing system, a grazing schedule, a table showing grazing capacity by pasture, and key plant species by pasture are outlined in Appendix H.

PASTURE	YEAR 1	YEAR 2	YEAR 3	YEAR 4
Steens	PR	R	G	G
Hollywood Field	R	R	G	G
Penland	E	PD	R	G
Telephone Field	PD	G	G	PD
V Lake	PD	G	G	PD
Skull Creek	G	G*	D*	D
Skull Lake	G	G	D	D
Spangenberg Pasture	G	G	D	D
South Catlow	W	W	W	W

Treatments: D = deferred (seed ripe)
E = graze early during the growing season to allow adequate regrowth to preboot stage
G = graze during growing season
PD = partial deferment
PR = partial rest only portions of pasture grazed
R = rest
W = winter

* When the Skull Creek Pasture is grazed in the fall, cattle would only be allowed to trail through lower Skull Creek. No fall grazing would be allowed in lower Skull Creek.

C. **Projects**

To implement the proposed grazing system, rangeland structural projects and vegetation treatment on public lands would be required. The location of structural projects is shown on Map 8. All proposed structural projects would require archaeological and T&E plant and animal clearances before any work would begin.

Prescribed burns on areas suitable for the reintroduction of fire and prescribed natural fire (PNF)* would be conducted on approximately 62,662 acres. The location of areas suitable for reintroduction of fire and PNFs are shown on Map 9.

1. Fence

A temporary fence, 4.6 miles long, would be constructed on public land where the original Penland fence was located, on the bladed line east of the South Fork of the Donner und Blitzen River, in T. 33 S., R. 33 E., Section 32; T. 34 S., R. 32½ E., Sections 24, 25, 26, and 36 and; T. 34 S., R. 33 E., Section 5 (see map 8). The fence, built to BLM fence specifications, would be 38 inches in height, with 3 strands of wire and the bottom strand smooth. Approximately 2.9 miles would be within the South Fork of the Donner und Blitzen River WSA (2-85G) and 1.7 miles within the High Steens WSA (2-85F).

* Prescribed Natural Fire is a natural caused wildfire which meets prescribed conditions described in the burn plan for the area.

SOUTH STEENS ALLOTMENT

ADAPTIVE ROTATIONAL GRAZING
(PROPOSED ACTION)
PROPOSED STRUCTURAL DEVELOPMENTS

LEGEND

EXISTING FENCES x x x x x x
PROPOSED FENCE (PENLAND) x x x x x x
RIPARIAN STUDY EXCLOSURES
PROTECTED SPRINGS

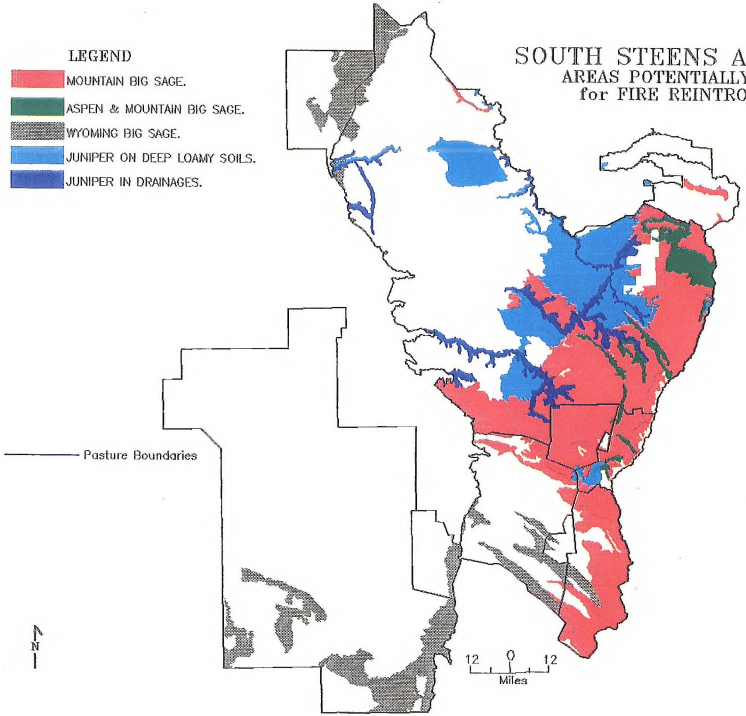
N

NO SCALE AVAILABLE

MAP 8

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
BURNS DISTRICT
1994
MAP PREPARED BY THE BURNS DISTRICT THROUGH NON-CARTOGRAPHIC METHODS

SOUTH STEENS ALLOTMENT
AREAS POTENTIALLY SUITABLE for FIRE REINTRODUCTION



MAP 9

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
BURNS DISTRICT
1994

MAP PREPARED BY THE BURNS DISTRICT THROUGH NON-CARTOGRAPHIC METHODS

The original Penland fence was located on a bladed catline to clear away brush and allow fence material to be brought to the construction site. The fence was destroyed when the area was burned by wildfire in about 1974. It was not functional when the inventory of existing structures was completed for WSAs. This structure was inventoried as a way (jeep trail), even though rock cribs, some steel posts, and scattered barbed wire still remained on the catline. Because this structure was inventoried as a way, the proposed Penland fence would be considered as a new structure. In view of this, the fence would now be classified as a new temporary project subject to the constraints outlined in BLM Instruction Memorandum (IM) No. 94-236. The fence would be removed immediately upon the area being designated as wilderness.

Three miles of nonfunctional fence would be removed from T. 35 S., R. 33 E., Section 4 and T. 34 S., R. 33 E., Section 33 in the High Steens WSA; and T. 34 S., R. 32½ E., Sections 14, 23, and 26 in the South Fork of the Donner und Blitzen River WSA.

Approximately 2 miles of gap fence in WSAs would be placed to shut off horse access trails into Lower Home Creek, Three Mile Creek, and the South Fork of the Blitzen River and to facilitate herding of livestock. Gap fences would be short and generally screened from view. No vegetation would be removed. Fences would need to be constructed immediately in order to reduce the wild horse use which occurs during 8 months of each year and facilitate herding of cattle away from riparian zones. Exact location of gap fences would be determined in cooperation with the Roaring Springs Ranch, Inc., and through analysis of monitoring data.

Other locations may become evident through analysis of rangeland monitoring data.

Temporary fences may be used along Lower Home Creek and Three Mile Creek to allow these areas several years of rest from grazing to provide for riparian recovery.

2. Spring Developments

Under the proposed action there would be developments on four springs located in T. 34 S., R. 32½ E., Section 35 NW¼SE¼; T. 34 S., R. 32½ E., Section 25 NW¼, NW¼; T. 34 S., R. 32½ E., Section 35 NE¼NE¼; and T. 35 S., R. 33 E., Section 5 SW¼SE¼ (public waterhole) (see Map 8 for locations). Exclosure fences would be constructed around the springs to protect riparian habitat from livestock and wild horse trampling and to improve water quality and quantity. Water would be piped outside the exclosures to troughs. Under the proposed action, more animals would water at these upland springs instead of at the South Fork of the Donner und Blitzen River and its tributaries.

Three of the protection fences would be split rail fences approximately 50-75 feet on a side. The shape of exclosures would conform to topography in order to blend in with the natural surroundings. Using polyethylene pipe, water would be piped into a trough some 30 yards from the spring sources. The troughs would be placed in a location where

they would blend in with the landscape. Troughs would be equipped with float valves. Type of trough, color, and placement would be carefully considered to minimize impairment of naturalness. The fourth exclosure (public waterhole) would be 2 acres in size and would be split rail or 4-strand barbed wire with the bottom strand smooth, a total height of 38 inches, and would be constructed to BLM's fencing standards. The trough and pipeline would be similar to the springs described above. All of the springs described are within the South Fork of the Donner und Blitzen and High Steens WSAs in the South Steens Pasture. The four spring developments within WSAs would also be enacted under Exception 4 of the general rule for the Interim Management Policy for WSAs.

3. Wells and Pipelines

A well would be drilled in T. 37 S., R. 32 E., Section 17, SE¼SE¼ or Section 16, SW¼SW¼, on an existing road in the South Catlow Pasture. The road is cherry stemmed inside the Basque Hills WSA (2-84). Troughs at the well would be removed following each winter grazing period.

An existing well in the Spangenberg Pasture (Skull Creek Seeding) and located in T. 36 S., R. 32½ E., Section 30 SW¼NW¼ would have 1.5 miles of pipeline and trough installed in the Skull Creek Seeding in the Spangenberg Pasture in T. 36 S., R. 32½ E., Sections 30, 31, and 32 (see Map 8).

4. Fire

Prescribed natural fire (PNF) and prescribed burning would reintroduce fire into this ecosystem. Determinations for the reintroduction of fire were based on data from the BLM Ecological Site Inventory (ESI) conducted during 1982 through 1985 with some updates completed during 1993 and 1994. Data used from this inventory were soil descriptions, identified site potential for plant communities (ecological sites), plant cover, and plant species composition within ecological sites. All sites were further analyzed for soil loss ratings using the revised Universal Soil Loss equation developed by the Soil Conservation Service.

Sites with deep to moderately deep soils (identified to series), canopy cover of 45 percent or more, slope less than 30 percent (depending on soil texture and amount of coarse fragments), and understory species of native perennials were considered potentially suitable for reintroduction of fire. Map 9 depicts the outer boundaries, by dominant vegetation types, of areas potentially suitable for the reintroduction of fire. However, many of the mapping units are complexes of soil series and ecological sites, which means individual soil series and ecological sites cannot be practically separated at the scale of maps in this document. The delineations shown on Map 9 necessarily include areas which are unsuitable for burning. Individual burn plans for specific sites will eliminate areas not suitable to be burned. These areas include areas of low sage with little herbaceous understory, rocky outcrops or other areas of shallow soil, critical fawning areas, sage grouse nesting and strutting areas, and other important areas.

A burn plan outlining prescriptions required to reintroduce fire would be completed before any burning could take place. A comparison of Maps 4 and 9 shows the location of burns in WSAs. All burns in WSAs would conform to interim management policy and District guidelines prepared for burning in WSAs.

All proposed burn areas would require two growing seasons of rest from grazing following the reintroduction of fire. Burning would be planned to provide a width of one-half mile or less to ensure adequate cover for wildlife species. Burning would create a mosaic of seral stages and increase species and community structural diversity.

Big sagebrush areas containing 5 percent or more canopy cover of young juniper trees (determined by height and age class data) would be given priority for reintroduction of fire.

a. Juniper

There are 36,920 acres (public and private) of juniper-dominated sites within the South Steens Allotment. Of this acreage, approximately 8,990 acres are potentially suitable for reintroduction of fire. Those ecological sites which are considered potential natural juniper sites were excluded and, therefore, no old growth juniper sites would be considered for reintroduction of fire.

The present juniper communities were identified and will be discussed in two categories (Zones 1 and 2 as shown on Map 9) because of site differences, plant species composition, susceptibility to soil erosion, and wildlife habitat requirements.

Juniper Zone 1 is approximately 7,338 acres, all of which is suitable to be burned. Fire would be reintroduced in moderately deep to deep soil sites with less than 30 percent slope, loamy 12-16 inches and loamy 16-25 inches ecological sites (ESI data 1982-1994). These sites are mountain big sagebrush, Idaho fescue, and bluebunch wheatgrass communities in which western juniper has increased significantly within the last 20 years (Vavra M., Laycock W., and Pieper R. 1994; Miller R.F. and J.A. Rose, 1995).

Juniper Zone 2 consists of areas with juniper encroachment along riparian areas, within draws and along slopes above riparian areas. There are 6,751 acres (public and private) within this zone, of which 1,652 acres would be suitable for the reintroduction of fire. The sites within this zone have moderately deep to deep soils with less than 30 percent slopes. (North slopes and south slopes ecological sites ESI data 1994.) These communities are presently juniper, Idaho fescue, bluebunch wheatgrass, and mountain big sagebrush with many young juniper under 5 feet in height. Care would be taken to ensure adjacent uplands are not burned in the same year. Fire would create a mosaic of seral stages with areas of sagebrush and juniper-dominated sites and burned areas dominated by herbaceous species. The sites identified

a 10-year period with a historical fire frequency to be maintained thereafter. The historical fire frequency is estimated to be 20-30 years (Winward A.H. 1985, Kauffmann, J.B. 1990).

b. Low Sagebrush

Low sagebrush communities occupy approximately 98,949 acres. Historically, fire has had little or no influence within this zone due to marginal fuels for carrying fire (Winward, A.H., 1985). The sites in which this community type are found typically have shallow soils or restrictive soil layers which result in low plant density. It is estimated that 5 percent or less of this community type would be suitable for the reintroduction of fire, especially those having an understory of Idaho fescue. These sites are often found in association with mountain big sagebrush, Wyoming big sagebrush, and juniper sites. Portions of the low sagebrush communities would serve as natural fire breaks when fire is reintroduced within other plant communities. Therefore, only a small percent of low sagebrush sites would burn.

c. Aspen

The Aspen Zone is scattered throughout the upper elevation of South Steens Allotment and is approximately 3,936 acres as shown on Map 9. Of this acreage, 1,983 acres would be suitable for fire reintroduction. Aspen clones (clumps of trees, several of which come from interconnecting roots) are located on moderately deep to deep soils in protected areas where snow accumulates, such as high elevation north exposures and depression areas. These sites are loess soils and are highly erodible. Sites less than 20 percent slope would be suitable for reintroduction of fire. Fire is required to perpetuate these stands and to develop a healthy understory with varied age classes and structural diversity (Houston, D.B., 1973).

Prescribed burns and PNFs within aspen types would be on small acreage, 20 to 100 acres in size. Mountain big sagebrush, in close proximity to aspen clones (within 250 yards), would be given special consideration to be retained for deer fawning cover (Sheehy, D.P., 1978). It is estimated 10 to 20 percent of these aspen clones would be burned within a 10-year period and thereafter fire would be allowed over a natural frequency estimated to be 15 to 20 years.

d. Wyoming Big Sagebrush

The Wyoming Big Sagebrush Zone is estimated to be 81,248 acres as shown on Map 9. Fire would be reintroduced on approximately 14,381 acres having a sufficient stand of diverse forbs and grass within the understory. Fire would establish a mosaic of seral stages and habitats which would increase species and structural diversity. It is estimated that fire would

structural diversity. It is estimated that fire would

be reintroduced over a 10-year period and thereafter fire would be allowed in a historical fire frequency estimated to be 50-100 years (Wright, H.A. and A.W. Bailey, 1982).

e. Mountain Big Sagebrush

The Mountain Big Sagebrush Zone is estimated to be 38,026 acres (see Map 9), of which 32,361 acres are suitable for reintroduction of fire. Historical fire frequency within this community type is estimated to be 15-20 years (Burkhardt, J.W. and E.W. Tisdale, 1976; Houston, D.B., 1973; Gruel and Eddleman (unpubl.)). Suitable sites contain deep to moderately deep soils (loamy 12-16 inches, loamy 16-25 inches, and gravelly benches) ESI data. It is estimated that 40-50 percent of the sites identified as suitable for the reintroduction of fire and between 12,944 to 16,180 acres could be burned within a 10-year period. A historical fire frequency of 15-20 years would be maintained thereafter.

Approximately 2,700 acres of public land in the headwaters of Ankle Creek contain key sage grouse nesting and brood rearing habitat. The area is a mosaic of meadows, grassland, low sagebrush, mountain big sagebrush and small patches of aspen. Less than ten percent of the mountain big sagebrush should be burned, and only in small patches to favor sage grouse forage species.

5. Study Exclosures

Five temporary study exclosures would be constructed in WSAs to exclude livestock and wild horses. Two of these exclosures would be located on representative juniper sites with part of the area treated by fire and the remainder untreated as a control. The same treatment would be conducted inside and outside the exclosures. Selection of sites for study would be based on ecological site data with the Northern Great Basin Experiment Station staff coordinating site selection and conducting research. The exclosure sites would be approximately 5 acres in size. The research conducted on these sites and other juniper encroachment sites on the Steens would be the basis for future management.

Two temporary exclosures, each approximately 1-mile in length, would be located on key riparian areas of Lower Home Creek and the South Fork of the Donner und Blitzen River WSAs. Exclosures would be wide enough to protect the entire riparian zone.

A third riparian exclosure, one-quarter mile in length, would be on Skull Creek. The purpose of the exclosures would be to observe changes in plant communities resulting from total exclusion of livestock and wild horses. Comparison studies would be conducted outside the exclosures (see the South Steens Monitoring Plan, Appendix G).

exclosures would have a temporary 4-strand barbed wire fence 38 inches high. Fences would be in conformance with WSA Interim Management Policy as stated in BLM H-8550-1 and IM 94-236. Planned location of riparian exclosures is shown on Map 8. Two exclosure sites on juniper encroachment areas would be determined following further site study in 1995.

III. DESCRIPTION OF ALTERNATIVE PLANS

A. Alternative I - Seasonal Grazing (April 1 to July 15) on Public Land East of Catlow Rim

Under this alternative, the season of use for livestock on public land in the mountain pastures (South Steens, Hollywood Field, Penland (if fenced), Skull Creek, and Skull Lake) would be shortened to reduce hot season and fall grazing. This season of use would provide maximum regrowth for riparian vegetation along the South Fork of the Blitzen River and its tributaries since livestock would be grazing during the season when uplands are more palatable. This alternative was designed to provide minimum impacts from livestock grazing on riparian areas on public land. It would require Roaring Springs Ranch, Inc. to fence all private land east of the Catlow Rim which would not be grazed during this season. The AUMs for livestock would be maintained at existing preference for initial stocking level. Future stocking levels would be determined by rangeland monitoring studies. The pastures below Catlow Rim and west of Highway 205 would be grazed as follows: The South Catlow Pasture would be grazed each winter with 2,000 cows during November 15 through March 15. The Spangenberg Pasture (Skull Creek Seeding) would be grazed on a rotation basis in the fall (September 1 to October 30) or spring (April 1 to May 30), or it would be rested.

Cattle would graze from the north end of the allotment south for 2 years of a 4-year cycle. During the next 2 years, cattle would be split into two herds and grazed up the mountain from two directions - north and south. In all years, the cattle would spend the summer hot season, July 16 to September 15, on private lands on the mountain and/or on the ranch base property in Catlow Valley. This alternative would utilize the same structural rangeland projects described under the proposed action. As in the proposed action, livestock would be excluded from Lower Home Creek and portions of Three Mile Creek. Riders would remove cattle drifting into these riparian zones. As these riparian areas improve, early season grazing could be increased. Temporary fencing and/or gap fencing may also be employed immediately to control access of wild horses and livestock, if monitoring indicates a need. Wild horses impacting critical riparian areas would be gathered or relocated. Wild horse management, reintroduction of fire into the ecosystem, and the removal of the Little Blitzen Pasture from the South Steens Allotment would be as described in the proposed action. A detailed written description of this alternative is shown in Appendix I.

This proposal is designed to ensure maximum regrowth following grazing in riparian areas on public lands at mid- and upper elevations. It does not incorporate Roaring Springs' intermixed private lands or private pastures. Management would be adaptive with consideration given to the past season's monitoring results as well as pre-season monitoring, current climatic conditions, and availability of water.

B. **Alternative II - Rotational Grazing with Pasture Fencing**

This alterative would encompass all management changes outlined in the proposed action. The allotment management objectives and monitoring plan would be as described in the Proposed Action. All structures described under the Proposed Action would also be implemented under this alternative. In addition, the South Steens Pasture would be divided into four pastures, requiring 18 miles of fence in addition to those considered under the Proposed Action. Thirteen miles of the proposed fence would be within WSAs. There would also be two additional riparian protection fences constructed around springs. The reintroduction of fire into the ecosystem would be as described in the Proposed Action. Map 10 shows the required developments.

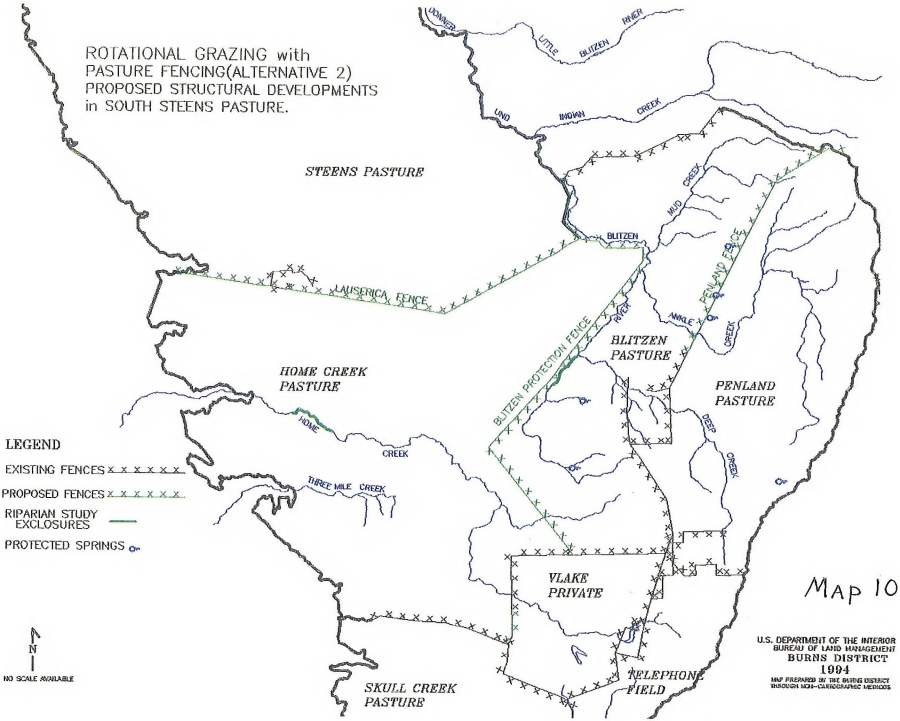
The grazing system would follow a 3-year cycle. Evaluation of monitoring data would occur annually with adjustments to the grazing system made as needed to meet objectives of the management plan. Formal evaluation would occur following the end of each 3-year cycle.

The Blitzen Pasture (19,990 acres) would contain the South Fork of the Donner und Blitzen River, most of its tributaries, and headwaters of the Blitzen River. Grazing use within this pasture may be adjusted to provide more rest or to change the timing of grazing if allotment objectives are not being met. In the first year, this pasture would be rested, the second year it would be grazed June 15 to July 15 and, the third year June 15 to July 30. The cattle would be herded from riparian areas throughout the season. At approximately 30 days, or as indicated by utilization levels, cattle would be moved to private pasture or the Penland Pasture. All cattle would be removed from the pasture by the ending date shown. See Map 10 for pasture boundaries and Appendix J for the grazing schedule.

The Penland Pasture (18,783 acres), farthest to the east, is at the highest elevation and contains the headwaters of Ankle Creek. During year 1, this pasture would be grazed June 15 to July 30 with cattle being herded to uplands throughout the use period. When utilization studies indicate proper use has been achieved, cattle would be herded from riparian zones to private pasture (V Lake and Telephone Field). All cattle would be removed from Penland Pasture by July 30. In the second year, this pasture would be grazed July 15 to August 15 with cattle being herded from riparian zones throughout the season. Cattle may be moved to Skull Creek Pasture during August, if needed. During the third year of the cycle, the Penland Pasture would be rested. V Lake and Telephone

Field Pastures (10,645 acres), would be grazed during August and could be rested during year 2 of the 3-year cycle, as determined by Roaring Springs Ranch, Inc.

Home Creek Pasture (35,654 acres) would contain Three Mile Creek and Home Creek. This pasture would be rested in year 1 and would have early grazing treatment (May 15 to June 15) during the next two grazing seasons. Livestock would be herded from riparian zones throughout this period. This pasture would be grazed for a shorter period or rested during wet and later growing seasons and cattle moved to the Steens Pasture. Grazing in Home Creek Pasture would be adjusted to provide more rest or to change the timing of grazing if allotment objectives are not being met.


ROTATIONAL GRAZING with
PASTURE FENCING(ALTERNATIVE 2)
PROPOSED STRUCTURAL DEVELOPMENTS
in SOUTH STEENS PASTURE.
LEGEND
EXISTING FENCES
PROPOSED FENCES
RIPARIAN STUDY EXCLOSURES
PROTECTED SPRINGS
N
NO SCALE AVAILABLE
STEENS PASTURE
HOME CREEK PASTURE
BLITZEN PASTURE
PENLAND PASTURE
VLAKE PRIVATE
SKULL CREEK PASTURE
TELEPHONE FIELD
LAUSERICA FENCE
BLITZEN PROTECTION FENCE
PENLAND FENCE
LITTLE BLITZEN RIVER
LONG
INDIAN CREEK
MUD CREEK
BLITZEN
RIVER
ANKLE CREEK
DEEP CREEK
HOME CREEK
THREE MILE CREEK
MAP 10
U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
BURNS DISTRICT
1994
MAP PREPARED BY THE BURNS DISTRICT
THROUGH NON-CARTOGRAPHIC METHODS

Steens Pasture (65,930 acres), the largest pasture above the rim, would be rested during year 1 and grazed the next 2 years of the 3-year cycle, from approximately April 15 to June 15. Hollywood Field would be grazed with this pasture.

The Skull Creek and Skull Lake Pastures would be grazed simultaneously in year 1 from May 1 to June 15. Grazing use would be deferred until after seed ripe during the second and third years of the 3-year cycle and then grazing allowed from late August to mid-September.

The South Catlow Pasture would be grazed from November 1 to March 15 each year. The Spangenberg Pasture (Skull Creek Seeding) would be grazed during April in year 1 of the 3-year cycle. The next two years it would be grazed in March as cattle are taken off the South Catlow Pasture. The Spangenberg Pasture may be rested during the third year of the 3-year cycle.

C. Alternative III - No Action

Under this alternative there would be no change in current management of the South Steens Allotment. Approximately 1,800 to 2,500 cattle are grazed in the South Catlow Pasture from November 15 to March 15 each winter. The South Steens Pasture is grazed each year (April 1 to October 31) with cattle numbers varying from 1,000 to 4,500 cows and calves. Cattle numbers vary by season and throughout the season with most cattle being on the South Steens, Telephone Field, and V Lake Pastures by July 1. Cattle are grazed on Skull Creek and Skull Lake Pastures April 1 to July 15 each year with numbers varying from 1,000 to 3,000 cows and calves. These pastures also receive use in the fall as cattle drift and are taken down the mountain. Hollywood Field Pasture is grazed each year, April 1 to May 31, in conjunction with the South Steens Pasture. The Spangenberg Pasture is grazed in the spring. Hollywood Field and Spangenberg Pastures receive periodic rest from livestock grazing.

Cattle are kept from loitering in riparian areas by riders on horseback who move them into the uplands. Cattle are kept from riparian areas when utilization on herbaceous vegetation reaches 45 percent or reaches 20 percent on woody species. When overall utilization levels in riparian areas of a pasture reach target levels, cattle are removed from the entire pasture. No rangeland structures would be constructed or reconstructed on public lands. The pasture in the Little Blitzen River Gorge would remain a nonuse pasture. The reintroduction of fire in the area would not occur.

IV. ENVIRONMENTAL CONSEQUENCES

A. Proposed Action

1. Anticipated Impacts

In the following manner, the plan outlined in the proposed action would impact those portions of the Donner und Blitzen River system and its tributaries, Home Creek, Three Mile Creek, and, to a lesser extent, Skull Creek which are in an unacceptable condition. Reduced grazing pressure on riparian zones and rest during the late season would allow

unacceptable condition. Reduced grazing pressure on riparian zones and rest during the late season would allow an increase in standing vegetation. Composition of desirable sedges, rushes, and woody species would increase and less desirable grasses would decrease. Root systems of sedges, rushes, and willow would protect the soil from erosion and the aerial portions of these plants would filter out sediment during periods of high runoff. Peak runoff events during the spring thaw and summer thunder showers would be reduced and low flow during late summer would be increased. There would be an increase in species richness, vegetative structural diversity, as well as age structural diversity.

The grazing treatments of deferment, changing timing of grazing, and periodic rest in conjunction with some critical growing season grazing would improve rangeland health in areas which now receive continuous seasonal use. It is expected that plant diversity would increase in these areas. Uplands that are currently in satisfactory condition would be maintained under this management. Livestock distribution would be controlled using a combination of fencing and riders. Riders would distribute the cattle and ensure areas are not overgrazed within many square miles. Some areas close to water could be overgrazed if riders fail to distribute cattle. The combination of the grazing system with a mosaic of plant community seral stages resulting from the reintroduction of fire should provide a maximum of plant and habitat diversity within this ecosystem.

Upland range conditions would be maintained or improved. Periodic rest and control of utilization levels would result in an increase in standing vegetation, litter and improved diversity of plant species in the community. Plants would more effectively use available water and nutrients, reduce rainfall impacts, reduce runoff and soil movement. Peak flows of overland runoff events would be reduced and ground water recharge increased.

Riparian zones would eventually widen and the water table would rise toward the soil surface. The revegetation of point bars would become apparent. Portions of the more degraded streams (Home Creek and Skull Creek) would continue lateral movement toward a more natural sinuosity (bending and curving). Many stream channels would narrow and deepen and the shade from woody species would prevent water temperature from rising too high. Water quality would improve especially with a reduction in sediment. These conditions would improve the fisheries in all streams, resulting in increased numbers and healthier populations of redband trout and Malheur mottled sculpin.

Those portions of these streams in an acceptable condition would be maintained or improved. Indicators outlined above and other factors listed in the Monitoring Plan would be used as indicators of an upward trend in the riparian zone (see Appendix G).

Under the Proposed Action, riparian habitat would improve along 41.8 miles of stream. Some difficulty in controlling cattle use on portions of Home Creek plus summer wild horse

Creek plus summer wild horse use would allow continued degradation of 0.2 mile of Home Creek (see Table 8).

No change would occur along 15.5 miles of stream. Many portions of stream are in good or excellent condition and are near their site potential. In some streams, headwaters and other reaches are not expected to recover in the foreseeable future because of steep streambed gradients, low sediment loads, and other site factors. This is true even under moderate grazing where utilization will not exceed 45 percent.

The Proposed Action considers the entire South Steens ecosystem irrespective of landownership. Private land in the headwaters of the Donner und Blitzen River system would receive the same treatment as public land downstream. The headwaters on private land would also improve. This is important when it is realized that 55.5 miles of stream are in public ownership and 81.9 miles of stream are in private ownership.

TABLE 8

LONG-TERM TREND IN PUBLIC LAND RIPARIAN CONDITION (Miles)
PROPOSED ACTION

STREAM	DOWN	UP	STATIC	TOTAL
Blitzen River		1.8	4.7	6.5
South Fork Blitzen River		9.1	3.5	12.6
Little Blitzen River		11.6		11.6
Mud Creek		.4		.4
Ankle Creek		1.7	.6	2.3
Deep Creek		1.6	.2	1.8
Tombstone Canyon			.4	.4
Home Creek	.2	4.9	2.7	7.8
Three Mile Creek		1.1	2.5	3.6
Skull Creek		.7	1.0	1.7
Big Indian Creek		3.3	.5	3.8
Little Indian Creek		1.5	1.5	3.0
TOTAL	.2	37.7	17.6	55.5

Sparse vegetative cover on public land in and adjacent to the Garrison Lakes area provide poor nesting cover for waterfowl. This is due to poor site potential and a shortage of water. Winter grazing would have no effect on this situation.

The North Catlow Wetlands provides limited habitat for rearing waterfowl and this condition is not expected to improve. The wetlands provide good cover, but water is

limited from early June until September 1 at a critical time for the rearing of waterfowl broods. The proposed grazing system would improve cover on public lands, however, nesting waterfowl would still have to travel over 3 miles to the nearest brood water, located on private land. Grazing of grasses and sedges creates new green sprouts and shoots which provide good forage for Canada geese and some species of dabbling ducks during the fall and spring.

Shorebirds are more affected by the presence of water than by grazing. Most of these birds feed heavily on aquatic invertebrates that occur following flooding.

The improved condition of vegetation in uplands and riparian areas would improve; therefore, the protection and enhancement of outstanding remarkable values would be improved as well as ecological values within the Home Creek, South Fork of the Donner und Blitzen, Blitzen River, and the High Steens, Basque Hills, and Alvord Peak WSAs (see the Donner und Blitzen Wild and Scenic River Final Plan and Environmental Assessment).

The improved condition of soils and vegetation in riparian areas, wetlands, and uplands would provide improved habitat (food and nesting) for bald eagles, American peregrine falcons, and white-faced ibis. Improved conditions in the uplands would provide improved habitat for sage grouse, bighorn sheep, ferruginous hawk, northern goshawk, and Swainson's hawk.

From previous counts and observations, approximately 30 horses graze east of where the Penland fence is proposed for reconstruction. The Penland fence would restrict the free travel of these wild horses. Stairstep rock structures (which would allow horses passage and restrict cattle) would be constructed over the fence along two key trails to facilitate movement of wild horses. These structures would be the only access points for horses when livestock use is active on the South Steens and Penland Pastures. Impact to horse movements would be further mitigated by leaving gates open during periods when no livestock use was occurring.

The South Catlow Pasture would have improved livestock distribution with periodic rest of portions of the pasture to ensure the shrub component of these plant communities can be sustained.

The beneficial impacts stated above would only occur if herding proves to be a viable alternative to fencing. If herding cannot reduce the grazing pressure on riparian zones and distribute cattle over the uplands, areas with perennial water would continue to receive heavy grazing.

Herding success can vary within different stream reaches. For example, during the 1994 grazing season, most of the South Fork of the Blitzen River was moderately grazed, however, some short segments were heavily grazed. Lower Home Creek was severely grazed, while grazing on Ankle Creek varied from slight to moderate. Success of herding is dependent on knowing the habits of cattle grazing by season, cattle preferences for plants at different elevations, and the skill and commitment of the riders.

Possible impacts to any cultural or historic sites will be mitigated by clearances being completed on all sites prior to any construction of facilities.

The proposed construction of the temporary Penland fence would be on the original catline used for fence construction, now used as a jeep trail (way). Rock cribs, some steel posts, and scattered barbed wire are all that remain of the original fence. The fence would be rebuilt in the center of the bladed cat trail utilizing existing rock cribs and steel posts. No disturbance of vegetation or soil would occur. Vehicles would no longer be able to traverse the bladed cat trail. The fence would be removed immediately upon designation of the area as wilderness.

The South Steens Work Group has determined the benefits to wilderness values justify the building of the Penland fence. Condition of vegetation on upland sites has been on an upward trend, reducing the impact of man in WSAs within the South Steens Allotment. The Penland fence will contribute to naturalness by ensuring that the imprint of man's work is substantially unnoticeable. The fence would create additional pastures where use could be rotated and periods of rest added to allow plants to complete their growth cycles and regain vigor.

Page 9 of the Bureau of Land Management's Wilderness Management Policy, September 24, 1981, states that the Bureau is to manage wilderness areas to augment multiple-use management of adjacent and nearby lands through protection of watersheds and water yield, wildlife habitat, natural plant communities, and similar natural values. The environmentally sound ecosystem based approach to management of this area will enhance naturalness of WSAs.

It has been stated that, "...a lack of coordinated control over wilderness users." can contribute to wildland values being lost (The Idaho Law Review, 1980, Volume 16). The Penland fence would allow BLM resource managers to establish better control over permitted use of public and adjacent private lands in a remote high desert WSA.

Immediate construction of gap fences on Home Creek and Three Mile Creek would result in significant improvements in the health and vigor of plants in riparian zones. The condition of wildlife habitat and fisheries would begin to improve in response to improved vegetative conditions.

Gap fencing would greatly improve riparian conditions by controlling access of livestock and wild horses to riparian zones within WSAs. Gap fences would restrict free travel of wild horses over portions of their normal range. The ecological and scenic values associated with WSAs would be protected and enhanced.

The cumulative impacts on WSA values of any additional gap fences not specifically identified within the proposed action would have to be analyzed in an amendment to this EA.

The proposed protection fences around springs would directly protect riparian vegetation and protect the natural function of the hydrologic system, therefore, enhancing the

naturalness of these springs. Troughs outside of the protection fences would directly benefit the Wild and Scenic River by providing more alternate water sources for livestock, wild horses, and wildlife away from the river corridor. The South Fork of the Donner und Blitzen River is the focal point of the South Fork of the Donner und Blitzen River WSA (2-85G). Providing a more natural riparian vegetative association, improving watershed functions and, improving fishery and riparian habitat would improve the overall naturalness of this WSA.

The use of split rail fences rather than barbed wire would help screen these manmade structures. Zigzag split rail fences would tend to blend into the natural landscape and would become even more rustic as they age. The rustic fences and improvement in vegetative cover would improve the overall naturalness of the High Steens WSA (2-85F) and the South Fork of the Donner und Blitzen River WSA (2-85G). Barbed wire fences would be more obtrusive but this impact would be moderated as fences are screened by vegetation and by using materials that blend with the natural environment.

The two temporary study exclosure fences located within the WSAs would have a short-term impact on naturalness because of the visual intrusion of additional developments. Improved riparian condition would have a long-term beneficial impact on ecological values.

The reintroduction of fire into the South Steens ecosystem would increase plant diversity by providing varied seral stages of plant communities. The resulting mosaic of vegetation associations would improve habitat for most wildlife species. Fire has been a natural component of the evolution of plant and animal communities and the reintroduction of fire would enhance continued natural ecological evolution (Houston, D.B., 1973). Some sagebrush obligate (dependent) species, such as sage thrasher, sage sparrow, and Brewer's sparrow could be displaced to adjacent unburned big sagebrush for nesting sites. Also, cavity nesters such as the common flicker could be displaced where large junipers are burned or fall over.

Prescribed burning and PNF would result in a mosaic of seral stages of diverse plant communities. The decrease of juniper and decadent sagebrush in communities identified for burn treatment, would provide for more efficient water transfer and improve nutrient cycling within the ecosystem. The anticipated changes in plant community diversity would improve watershed functions and ecological values of the Wild and Scenic River and the WSAs. The diversity of plant communities would improve habitat for large herbivores, some small mammals, and birds.

Prescribed burns along the Catlow Rim would improve habitat for bighorn sheep. Burning would change woody plant communities to a mosaic of herbaceous and woody communities. For the first 2 years following burning, grasses and forbs would be more succulent and higher in nitrogen then in unburned areas. This succulent growth would provide improved forage for bighorn sheep and mule deer during the spring. Greenup may occur during some winters which would also benefit wildlife.

There would be no impact on the bald eagle, American peregrine falcon, white-faced ibis, bufflehead, greater sandhill crane, Pacific western big-eared bat, or spotted bat. Northern goshawk, Swainson's hawk, and ferruginous hawk could benefit from increased availability of prey associated with areas burned in a mosaic of small patches. Limiting grazing to 45 percent utilization on herbaceous vegetation along streams would also reduce use on uplands which receive less pressure from grazing. The residual herbaceous cover on uplands would favor nongame species due to the increased food supply (seeds) and protective cover.

Western sage grouse could benefit from prescribed fire in mid-elevation areas supporting mountain big sagebrush and meadows and streambanks being taken over by sagebrush. Such burning would improve habitat for the Catlow tui chub, the Catlow Valley and inland redband trout, Malheur mottled sculpin, spotted frog, boblink, and yellow - billed cuckoo.

Burning of decadent aspen stands would have a long-term benefit on habitat for the western bluebird and Lewis woodpecker through perpetuation of vigorous aspen stands. Burning of large juniper trees would reduce the number of cavities available for nesting bluebirds. All of the above mentioned species are in Special Status, Threatened, or Endangered categories (see Appendix C).

Aspen burning would also improve habitat for mule deer and elk and the many songbirds using aspen. Burning of western juniper stands would reduce cover used by these species, but would allow an increase in forage which would benefit deer and elk. Burning would provide an open, low vegetation habitat readily used by antelope.

Impacts on wildlife of grazing areas following burning cannot be generalized (Lyon, et. al., 1979, as cited in BLM, 1989). Ream (1981) reviewed 237 references on the effects of burning on small mammals and songbirds and found variable responses. Boch, et.al. (1993) found variable responses on songbirds and raptors due to grazing.

New fences would create a slight hazard to mule deer, elk, and sage grouse. Development of springs in upland areas would draw livestock and wild horses away from riparian areas and allow improvement in the associated wildlife and fishery habitat.

There would be no negative impacts to special status plants or animals resulting from the proposed action, with all areas being inventoried before any ground disturbing activity would be allowed.

The study exclosures within juniper encroachment areas and the treatment by fire at these sites would provide needed information on community responses to fire with and without livestock grazing. The data gathered in these studies would be the basis for analysis of other juniper encroachment sites within the South Steens Allotment.

2. Mitigating Measures

a. After one cycle (4 years) of adaptive rotational grazing, rangeland monitoring studies would be formally evaluated. Rangeland monitoring studies would be reviewed annually and adjustments would be made to ensure allotment management objectives are met.

b. Two rock stairstep structures would be constructed in the Penland fence to facilitate horse movement. The structures would be 8 to 12 feet wide with 3 stairs 1.5 feet high and 2 feet deep on both sides of the fence. Basalt rock in the vicinity of the fence would be used to build the stairsteps. Fencing would be screened by vegetation and topography as much as possible.

c. Manmade materials used in fencing would include such things as fenceposts painted with colors designed to reduce visibility of the fence.

c. Aesthetics and naturalness of the High Steens and the South Fork of the Donner und Blitzen River WSAs would be improved by removing approximately 3 miles of nonfunctional fence.

d. Water troughs at springs in WSAs would be installed in a manner to appear as a small natural waterhole. Fence construction and pipe and trough installation would be completed using hand tools. Materials would be delivered to sites using existing roads and ways. Where a vehicle could not be used, a helicopter would be used to bring materials in a sling. Any surface disturbance at a spring site would be returned to as near normal contour as possible and reseeded to native plant species.

e. Gap fences would use rock wall fencing where possible. Topographic features and vegetation would be utilized to screen structures. Basalt rock is plentiful in the vicinities of the gap fences.

The Wilderness Specialist would be involved during placement and location, and assist in determination of amount of fence required at all proposed sites.

f. Prescribed burns and PNFs would have mitigation measures identified for specific treatment areas in the fire plan which would be developed before any fire activity would be allowed.

3. Cumulative Impacts

The cumulative impacts of the proposed structures to the naturalness in WSAs would not be sufficient to keep them from being incorporated into the national wilderness system. The improvement in vegetation density and species composition, more stable soil, reduced erosion, streambank stability, improved water quality, improved fishery, and improved wildlife habitat resulting from improved grazing

management would combine to improve the naturalness of the South Steens ecosystem.

4. Residual Impacts

None.

B. **Alternative I - Seasonal Grazing (April 1 to July 15) on Public Land East of Catlow Rim**

1. Anticipated Impacts

This season of use would have livestock removed from public land before the upland forage matures in the higher elevations. Because the upland grasses are highly palatable during the proposed time of use, the animals would spend less time grazing riparian zones. This should allow desired woody species to become reestablished in riparian zones. This season of use would allow maximum regrowth of herbaceous and woody riparian species and improve streambank stability during peak flows at mid- and upper elevations Riparian areas at lower elevations would regrow, but regrowth would not be at optimum levels. In addition, early season large herbivore grazing along wet, vertical streambanks could cause bank shearing (Platts, 1991). Livestock distribution would continue to be a problem if riders are not present to move the cattle. Grazing would be during a critical growth period for upland grasses. In those areas receiving continuous critical growing season utilization, plant community diversity may be reduced resulting in a static to downward trend in range condition and a resulting degradation of wildlife habitat. This alternative would have grazing at a critical growth period for grasses (preboot to boot stage) on a continuous seasonal basis in the lower elevations (approximately below 6,000 to 6,500 feet). Plant community diversity would be reduced with the loss of plants such as Idaho fescue, bluebunch wheatgrass, needlegrasses, and desert parsley in the lower elevations. Sagebrush and juniper would increase in the lower elevations with this type of management. Regrowth of vegetation would be minimal due to late season (mid-summer) removal of livestock from the area.

The higher elevations (6,000 to more than 6,500 feet) on public land would have little to no livestock use in most years with many areas receiving perpetual rest. These areas would be rested or grazed when grasses are in a vegetative stage and, therefore, would have maximum regrowth after the cattle are removed. Plant community and habitat diversity would increase in areas that had continuous seasonal use in the past. Uplands which already exist in a satisfactory condition in the higher elevations would be maintained under this alternative. The mosaic of plant communities resulting from the reintroduction of fire would provide maximum plant and habitat diversity in the higher elevations. The continuous seasonal use would reduce species diversity in areas where fire was reintroduced into the lower elevations.

This season of use would not allow Roaring Springs Ranch, Inc., to summer cattle on Steens Mountain without reconstructing boundary fences between private and public lands in the V Lake and Telephone Field Pastures. The Ranch may fence the private land blocks in the South Steens Pasture to allow cattle use during the summer. Although direct impacts of fencing would be on private lands, the amount of fencing along WSA boundaries would have a direct influence on the naturalness of the High Steens, South Fork of the Donner und Blitzen River, and Home Creek WSAs.

Separation of grazing on private land from public land in the headwaters of the South Fork of the Donner und Blitzen, tributaries to the South Fork of the Donner und Blitzen River, the upper 4 miles of Home Creek, and upper Three Mile Creek would eliminate the present cooperative efforts between BLM and Roaring Springs Ranch, Inc. The segmenting of grazing management into smaller private parcels would require more intensive grazing management on private lands. Grazing of private land during the summer and fall would impact condition of herbaceous and woody plants on uplands and riparian areas.

Riparian habitat would improve along 38.3 miles of stream. Removal of cattle by July 15 would allow regrowth of riparian vegetation and cattle would not be as attracted to succulent riparian herbaceous vegetation until July 1 at lower elevations. The long-term trend would be down along 1.0 mile of Home Creek, a degraded stream that attracts late summer wild horse use and some streambank sheering would occur due to early season use. No change would occur along 16.2 miles. Portions of the Blitzen River, Home Creek, Three Mile Creek, and Little Indian Creek are near or at their site potential and would not change (see Table 9).

Riparian condition on headwater streams in private ownership may be degraded under this alternative. With more restrictive use on public land, the rancher may be forced to use private rangelands heavier. Also, public rangelands may be used with more cattle for a shorter time in order to utilize more of the existing grazing preference. This may slow down the anticipated recovery of water quality, aquatic habitat, and fisheries under this type of segmented management on public riparian areas.

Impacts on wildlife wetland habitat would be similar to those occurring under the Proposed Action.

Fencing of private lands would impact the free travel of wild horses. Also the public would no longer have access to all intermingled private lands as they currently do.

No impact is expected on the bald eagle, American peregrine falcon. white-faced ibis, bufflehead, greater sandhill crane, Pacific western big-eared bat, spotted bat, northern goshawk, Swainson's hawk, and ferruginous hawk from this alternative. Riparian habitat would be improved for the Catlow tue chub, the Catlow valley and inland redband trout, Malheur mottled sculpin, spotted frog, bobolink and yellow-billed cuckoo.

Impacts to wildlife from burning would be the same as under the Proposed Action. Removing cattle by July 15 would leave considerable residual cover on the uplands above 6,000 feet elevation, improving cover for many wildlife species. Impacts on wildlife from structures would be the same as described in the Proposed Action.

TABLE 9

LONG-TERM TREND IN PUBLIC LAND RIPARIAN CONDITION (Miles)
ALTERNATIVE I

STREAM	DOWN	UP	STATIC	TOTAL
Blitzen River		1.8	4.7	6.5
South Fork Blitzen River		9.6	3.0	12.6
Little Blitzen River		11.6		11.6
Mud Creek		.4		.4
Ankle Creek		2.3		2.3
Deep Creek		1.8		1.8
Tombstone Canyon			.4	.4
Home Creek	.5	4.1	3.2	7.8
Three Mile Creek	.5	.7	2.4	3.6
Skull Creek		1.2	.5	1.7
Big Indian Creek		3.3	.5	3.8
Little Indian Creek		1.5	1.5	3.0
TOTAL	1.0	38.3	16.2	55.5

2. Mitigating Measures

   a. Ensure riders distribute cattle grazing the South Steens Pasture.

   b. Implement an adaptive rotational grazing strategy similar to that in the proposed action, but with the reduced season of use. Work with the Roaring Springs Ranch, Inc. to encompass as much of the intermingled private land as possible with public land management.

3. Cumulative Impacts

   None.

4. Residual Impacts

   None.

C. Alternative II - Rotational Grazing with Pasture Fencing

1. Anticipated Impacts

The impacts of this alternative on the condition of riparian and upland soils and vegetation would be very similar to those expected from the Proposed Action if the use of riders is successful. Additional fencing in WSAs would increase impacts to naturalness and opportunities for primitive and unconfined recreation.

Alternative II would allow considerable control over livestock and improved opportunities for limiting wild horse use on riparian areas. Riparian habitat would improve along 43.7 miles of streams. Home Creek would benefit from improved control of cattle and wild horses due to pasture fencing. No change would occur along 13.6 miles of streams. Most of this 13.6 miles of streams are in good or excellent condition and are near their site potential (see Table 10).

The impacts to upland vegetation would be the same as described under the proposed action. However, with the increased fencing, there would be flexibility to provide more rest, where needed, and change the timing of grazing frequently because of the reduced size of pastures. This alternative has less chance for human error in that riders would move cattle within less square miles per pasture and, therefore, have more control on timing of livestock moves and control of utilization levels. In summary, those uplands which need improvement would improve at an accelerated rate under this alternative.

Impacts on wildlife wetland habitat would be similar to those occurring under the Proposed Action.

Impacts to wildlife would be similar to the Proposed Action, but with a greater improvement in riparian habitat than expected under the other alternatives. Construction of the Penland fence, exclosures, and an additional 18 miles of fence would be a slight hazard to deer, elk, and sage grouse.

Alternative II considers the entire South Steens ecosystem irrespective of landownership. Private land in the headwaters of the Donner und Blitzen River system would receive the same treatment as public land downstream. The headwaters would improve as rapidly as the downstream areas. This is important when it is realized that 55.5 miles of stream are in public ownership and 81.9 miles of stream are in private ownership.

TABLE 10

LONG-TERM TREND IN PUBLIC LAND RIPARIAN CONDITION (Miles)
ALTERNATIVE II

STREAM	DOWN	UP	STATIC	TOTAL
Blitzen River		1.8	4.7	6.5
South Fork Blitzen River		12.6		12.6
Little Blitzen River		11.6		11.6
Mud Creek		.4		.4
Ankle Creek		2.0	.3	2.3
Deep Creek		1.7	.1	1.8
Tombstone Canyon			.4	.4
Home Creek	.1	5.4	2.3	7.8
Three Mile Creek		1.2	2.4	3.6
Skull Creek	.1	1.3	.3	1.7
Big Indian Creek		3.3	.5	3.8
Little Indian Creek		1.5	1.5	3.0
TOTAL	.2	42.8	12.5	55.5

2. Mitigating Measures

Fences would be located in areas to reduce visual impacts. Fence materials used would blend in with the natural environment. Fences would be constructed with minimal disturbance to soil and vegetation. All nonfunctional fences would be removed from WSAs (estimated 20 miles).

3. Cumulative Impacts

None.

4. Residual Impacts

None, because fences could be removed.

D. Alternative III - No Action

1. Anticipated Impacts

Under the existing situation, livestock graze during critical growth periods for grasses at all elevations on South Steens, Skull Creek, and Skull Lake Pastures. Plant community diversity has been reduced on portions of these pastures as a result of continuous seasonal use during critical growth periods of key plant species. There is no rest or change in the timing of grazing to avoid critical periods under current management (except as dictated by climate). Satisfactory range condition has not been maintained under this current management in many areas and little change in seral stages would be anticipated from the

present (see Table 6). The mosaic of seral stages and resulting plant diversity due to the reintroduction of fire would not occur under this alternative.

Distribution of livestock would improve with the use of riders. Lightly grazed areas within the South Steens Pasture would receive greater use but optimum utilization levels would not be reached. Grazing on riparian areas and meadows would continue to receive heavier use than desired. This is partly because of the difficulty of keeping cattle east of the river without the Penland fence.

The 22.1 miles of public riparian habitat which is in unsatisfactory condition would remain static or improve more slowly than under the proposed action and other alternatives.

Impacts on wildlife wetland habitat would be similar to those occurring under the Proposed Action.

Upland range condition would remain stable or improve on most sites and, decline on areas grazed continuously during critical growth periods of grasses (boot and preboot stages).

Those areas that receive yearly seasonal heavy grazing would also continue to decline. The Donner und Blitzen Wild and Scenic River system would not improve as outlined in the management plan for this river and as required by law under the Omnibus Oregon Wild and Scenic Rivers Act of 1988.

The ecological values of riparian areas in WSAs would continue to be impacted. There would be less improvement in the density of woody species and herbaceous species diversity and reduction in soil erosion in portions of Home Creek, Three Mile Creek, and the South Fork of the Donner und Blitzen River.

Under the present management, plus herding of up to 4,500 cattle, riparian habitat would improve along 27.1 miles of stream. The long-term trend would be down along 5.6 miles of stream. Bank erosion would accelerate and cover would be degraded along these portions (see Table 11).

No change would occur along 22.8 miles of stream. Most stream sections that are in good or excellent condition are rough and rocky with little cattle or wild horse grazing. Some degraded sections would not change.

Impacts to wildlife would be similar to Alternative 1. Impacts from burning would be foregone.

The least improvement of riparian habitat would occur under this alternative. Foregoing construction of the Penland fence would make it more difficult to control livestock, causing heavier utilization in riparian zones. Also, foregoing the 4 spring developments would not allow improvement in the riparian habitat around these springs and would allow heavier utilization along streams.

TABLE 11

LONG-TERM TREND IN PUBLIC LAND RIPARIAN CONDITION (Miles)
ALTERNATIVE III

STREAM	DOWN	UP	STATIC	TOTAL
Blitzen River		1.6	4.9	6.5
South Fork Blitzen River	2.0	6.0	4.6	12.6
Little Blitzen River		11.6		11.6
Mud Creek		.4		.4
Ankle Creek	.6	.6	1.1	2.3
Deep Creek	.3	.3	1.2	1.8
Tombstone Canyon			.4	.4
Home Creek	1.5	1.8	4.5	7.8
Three Mile Creek			3.6	3.6
Skull Creek	1.2		.5	1.7
Big Indian Creek		3.3	.5	3.8
Little Indian Creek		1.5	1.5	3.0
TOTAL	5.6	27.1	22.8	55.5

Western juniper has encroached on much of the mid-elevation rangeland on Steens Mountain. As these trees increase in size and density, other plants such as (but not limited to) aspen, mountain big sagebrush, snowberry, serviceberry, bitterbrush, Idaho fescue, bluebunch wheatgrass, Thurber's needlegrass, various lupines, and Indian paintbrush would continue to be crowded out. This is the result of competition for limited resources causing a decline in both structural and species diversity. The overall result would be a decline in the health of the ecosystem.

2. Mitigating Measures

None.

3. Cumulative Impacts

The South Steens Allotment ecosystem would continue to decline or remain static and few of the benefits of protecting riparian areas and properly grazing the uplands would occur. The Roaring Springs Ranch, Inc. would probably fence private property boundaries and restrict public access to thousands of acres of private land. Upland watershed soil and vegetation on private land would probably deteriorate and cause increased sedimentation of downstream riparian areas located on public land.

4. Residual Impacts

Continued decline of watershed.

V. CONSULTATION AND COORDINATION

Ken Bentz, Harney County Commissioner
Oregon Department of Fish and Wildlife
Roaring Springs Ranch, Inc.
South Steens Work Group

Notification of this EA will be presented in the Burns Times Herald and the Bend Bulletin.

It is anticipated that this action will be of high interest within Harney County. It will be of high interest to wilderness groups, wild horse advocates, and all identified affected interests for the Steens Mountain.

VI. PARTICIPATING STAFF

Team Leader Jim Buchanan, Range Management Specialist/Ecologist

Steve Anderson, Steens Mountain Coordinator
Gordon Bentley, Environmental Coordinator
Bruce Crespin, Archaeologist
Rick Hall, Natural Resource Specialist
Ron Harding, Wild Horse Specialist
Fred McDonald, Recreation Specialist
Scott Moore, Wilderness Specialist
Guy Sheeter, Wildlife Biologist
Mark Sherbourne, Natural Resource Specialist

VII. LITERATURE CITED

Bauer, S.B. and T.A. Burton. 1993. Monitoring Protocols to Evaluate Water Quality Effects of Grazing Management on Western Rangeland Streams. EPA 910/R-93-017, 179 p.

Bjornn, T.C. and D.W. Reiser. 1991. Habitat Requirements of Salmonids in Streams. Chapter 4, pp. 83-138, in: W. R. Meehan, ed., Influences of Forest and Rangeland Management on Salmonid Fishes and Their Habitats. American Fisheries Society, Bethesda, MD.

Bock, C.H., V.A. Saab, T.D. Rich, and D.S. Dobkin. 1993. Effects of Livestock Grazing on Neotropical Migratory Landbirds in Western North America. In: Status and Management of Neotropical Migratory Birds. USDA, Forest Service, Gen. Tech. Rep. RM-229, Fort Collins, Colo., pp. 269-309.

Bureau of Land Management. 1989. Draft Environmental Impact Statement, Vegetation Treatment on BLM Lands in Thirteen Western States, USDI, pp. 3-39.

Bureau of Land Management. 1989. Final Oregon Wilderness Environmental Impact Statement, Volume III, December, pp. 325-605.

Burkhardt, J.W. and E.W. Tisdale. 1976. Causes of Juniper Invasion in Southwestern Idaho Ecology (1976) 57: pp. 472-484.

Cuplin, Paul. 1986. Water Quality. In: A.Y. Cooperrider, R.J. Boyd, and H.R. Stuart, editors. Inventory and Monitoring of Wildlife Habitat. USDI, BLM, pp. 633-638.

Erman, N.A. 1984. The Use of Riparian Systems by Aquatic Insects. In: R.E. Warner and K.M. Hendriz, editors. California Riparian Systems-ecology, Conservation, and Productive Management. University of California Press, pp. 177-182.

Gruel and Eddleman (unpubl.)

Houston, D.B. 1973. Wildfires in Northern Yellowstone National Park, Ecology 54:1109-1117.

The Idaho Law Review, 1980, Volume 16

Johnsen, T.N., Jr. 1962. One Seed Juniper Invasion of Northern Arizona. Ecol. Monogr. 32:187-207.

Kauffman, J.B. 1990. Proceedings Northwest Range Management Short Course, Oregon State University. The Ecology of fire in Rangelands: Historical and Current Contexts, pp. 2-5.

Mehringer, P.J., Jr., and P.E. Winyard. 1990. Comparison of Late Holocene Environments From Woodrat Middens and Pollen: Diamond Craters, Oregon, pp.294-325 In: J.L. Betancourt, T.R. Van Devender and P.S. Martin (eds), Packrat middens: The Last 40,000 Years of Biotic Change, Univ. Arizona Press, Tucson.

Miller R.F. and J.A. Rose. 1995. The Historic Expansion of *Juniperus occidentalis* (western juniper) in Southeastern Oregon, Great Basin Naturalist (in press).

Platts, W.S. 1991. Livestock Grazing. In: Influences of Forest and Rangeland Management on Salmonid Fishes and Their Habitats, W.R. Meehan Editor. American Fisheries Society, Special Publication 19, 409 p.

Ream, C.H. 1981. The Effects of Fire and Other Disturbances on Small Mammals and their Predators - An Annotated Bibliography. USDA, Forest Service, Gen. Tech. Rep. INT-106, 55 p.

Sheehy, D.P. 1978. Characteristics of Shrubland Habitat Associated with Mule Deer Fawns at Birth and During Early Life in Southeastern Oregon. Information Report Series, Wildlife No. 78-1, Oregon Dept. of Fish and Wildlife and Oregon State Univ. 31 p.

Shinn, Dean A. 1980. Historical Perspectives on Range Burning in the Inland Pacific Northwest: Journal of Range Management 33(6) Nov. 1980, pp. 415-423.

Vavra, M., W. Laycock, and R. Pieper. 1994. Ecological Implications of Livestock Herbivory in the West. Published by Society for Range Management, pp. 118-121.

Winward, A.H. 1985. Rangeland Fire Effects. A Symposium on Fire in the Sagebrush-grass Ecosystem - the Ecological Setting. Published 1985. Bureau of Land Management, Idaho State Office.

Wright, H.A. and A.W. Bailey. 1982. Fire Ecology; United States and Southern Canada, John Wiley and Sons, N.Y.

AQUATIC HABITAT INVENTORY
DONNER UND BLITZEN RIVER

Segment A - Donner und Blitzen River
Mainstem not surveyed in 1991.

Segment B - Little Blitzen River

Reach	River Mile	Condition
18	0.0 - 1.5	Fair
19	1.5 - 3.1	Fair
20	3.1 - 4.0	Fair
21	4.0 - 4.9	Fair
35	7.8 - 10.3	Good
38	10.3 - 11.4	Good

Segment C - South Fork Donner und Blitzen River

Reach	River Mile	Condition
28	0.0 - 1.8	Good
29	2.8 - 3.7	Good
30	3.7 - 4.7	Good
39	4.7 - 5.8	Good
34	5.8 - 6.8	Good
31	7.3 - 8.0	Fair
32	9.7 - 10.9	Poor
33	10.9 - 12.5	Poor
10	12.5 - 13.8	Poor
13	15.2 - 16.6	Poor
	Deep Creek	
15	0.0 - 0.8	Poor
16	0.8 - 1.1	Poor
17	1.4 - 1.8	Fair

Segment D - Indian and Big Indian Creek

Reach	River Mile	Condition
22	0.0 - 1.1	Fair
23	1.1 - 2.1	Fair
24	2.1 - 2.6	Good
25	2.6 - 4.5	Good
27	4.5 - 5.7	Good
36	9.4 - 10.8	Excellent

Segment E - Little Indian Creek

Reach	River Mile	Condition
26	0.0 - 1.2	Good

Segment F - Fish Creek
Not surveyed in 1991.

GOALS AND MANAGEMENT OBJECTIVES

FOR

SOUTH STEENS ALLOTMENT

I. RIPARIAN

Goal: Improve and maintain riparian habitat by increasing herbaceous and desired woody species (willows and associated species). The following streams or portions of these streams where there is potential to improve are targeted to show measurable improvements. Riparian improvement will require cooperation with the private landowner.

Donner und Blitzen River
South Fork of the Donner und Blitzen River
Ankle Creek
Deep Creek
Mud Creek
Home Creek
Three Mile Creek
Skull Creek

Objective: Improve the trend of riparian condition to upward on 5.6 miles of Home Creek and Three Mile Creek within 3 years of management plan implementation. Change riparian conditions from 3.2 miles in poor condition and 8.7 miles in fair condition on Ankle Creek, Deep Creek, and the South Fork Blitzen River to good and excellent condition within 10 years following implementation of this plan. Maintain good and excellent condition on 5.2 miles of these streams (including Mud Creek). Maintain good and excellent condition on 6.5 miles of the Donner und Blitzen River. Skull Creek will be slower on recovery; upward trend in riparian condition should be measurable within 3 years after implementation of this management plan.

II. UPLAND AREAS

Goal: Manage uplands in a mosaic of native plant communities and seral stages. The focus of management will be on plant communities such as mountain big sagebrush, aspen, low sagebrush, and juniper that appear to be changing ecologically to a point of concern over future watershed integrity.

Objective:

A. Determine the rate of ecological change and the opportunity (window) to apply management strategies such as prescribed fire.

B. Determine ecological changes in plant communities that alter the desired range of variability in seral stages.

C. Maintain and/or improve uplands condition.

III. WILD HORSES

Goal: Manage forage and water resources to provide quality habitat for wild horses in the South Steens Herd Management Area (HMA).

Objective: Manage wild horse populations at an appropriate management level of between 159 and 304 animals to maintain a thriving natural ecological balance within the HMA. Provide adequate quality forage for 3,648 AUMs of wild horse use. Wild horses will be managed in a manner which maintains satisfactory riparian condition and improves riparian conditions where less than satisfactory conditions exist.

IV. THREATENED, ENDANGERED AND SENSITIVE SPECIES

Goal: Land and resource uses will be managed to provide habitat for viable populations of (Threatened, Endangered and Sensitive (T, E&S)) plant and animal species present on the allotment.

Objective: Provide habitat for viable populations of the following (T, E&S) species known to exist on the South Steens Allotment.

A.	Steens Mountain paintbrush	Category 2 sensitive species
B.	Redband trout (potentially two strains)	Category 2 sensitive species
C.	California bighorn sheep	Category 2 sensitive species
D.	Sage grouse	Category 2 sensitive species
E.	Catlow tui chub	Category 2 sensitive species
F.	Bald eagle	Threatened and Endangered species
G.	Peregrine falcon	Threatened and Endangered species

V. STABILITY OF RANCH OPERATION

Goal: Forage and water resources will be managed to provide sufficient qualities and quantities that will support a harvest on a sustained basis for livestock, wild horses, and wildlife. This will contribute to the economic stability for the county and ranch unit.

Objective: Maintain the stability and flexibility of the ranching operation. Improve productivity of the private land not in the allotment. The general season of use for the allotment is April 1 - October 31 and November 16 - March 15 with 21,197 AUMs attributed to public lands and 14,381 AUMs attributed to private lands within the allotment.

Seasonal and annual flexibility in moving and scheduling of livestock use must be coordinated and agreed upon between the ranch and BLM. This flexibility is based upon the need to adapt to environmental conditions and to meet resource objectives. Rationale for all changes must be documented in writing (Plan, Monitor, Control, Replan).

VI. WILDERNESS

Goal: Manage land and resource uses within Wilderness s (WSAs) in a manner that will protect and enhance wilderness values within the scope of the BLM's Interim Management Policy (IMP) for WSAs (do not impair the suitability of these areas for wilderness designation).

Objective: Manage the following WSAs within the South Steens Allotment in accordance with IMP policy:

No. 2-82 Rincon*	No. 2-85H Home Creek*
No. 2-83 Alvord Peak	No. 2-86E Blitzen River*
No. 2-84 Basque Hills	No. 2-85F High Steens*
No. 2-85G S. Fork Blitzen River	No. 2-86F Little Blitzen Gorge

* These WSAs or the portions of these WSAs within the South Steens Allotment have been recommended for wilderness designation by the BLM in the Final Oregon Wilderness EIS.

VII. WILD AND SCENIC RIVER CORRIDOR

Goal: Manage land and resource uses within the Donner und Blitzen Wild and Scenic River Corridor to protect and improve resource conditions with special emphasis on the outstandingly remarkable values described in the Final Wild and Scenic River Management Plan.

Objective: Manage to protect and enhance the Donner und Blitzen National Wild and Scenic River as outlined in the Final River Management Plan Environmental Assessment (EA) of November 1992. Protection and enhancement of the outstandingly remarkable values is required by the National Wild and Scenic Rivers Act. The outstandingly remarkable values are: scenic quality, geologic, recreation, fish, wildlife, vegetation, and cultural (historic). All protection and enhancement activities will be based on ecological function. Also applicable are the Riparian and Fisheries and Aquatic Habitat objectives.

VIII. FISHERIES AND AQUATIC HABITAT

Goal: Maintain or improve fisheries and aquatic habitat through changes in riparian vegetation within the allotment to enhance water temperatures, reducing peak flows, increasing sustained flows, and reducing the amount of the sediments in the substrates of streams.

Objective: Establish baseline data from which target or desired trends for fish and aquatic habitat characteristics will be determined. These characteristics are but not limited to:

A.

1. Nutrient input
2. Water temperature
3. Oxygen
4. Sedimentation
5. Cover
6. Pool: riffle

B. Use currently available data to design a monitoring plan.

IX. WILDLIFE HABITAT

Goal: Manage vegetation to enhance or maintain a diverse habitat mosaic for a diversity of wildlife species. Attention will be given to seasonal and yearlong habitat requirements for all wildlife species.

Objective: Maintain or improve aspen and riparian vegetation for the benefit of neotropical migrant songbirds and other species. Create and maintain a dynamic mosaic of seral stages that will meet the forage and cover requirements for mule deer, bighorn sheep, elk, sage grouse, and antelope. Acquire additional information on the habitat requirements for amphibians, reptiles, mammals, and birds.

X. REINTRODUCTION OF FIRE

Goal: Reintroduction of natural and prescribed fire as an ecosystem function.

Objective:

A. Maintain watershed integrity to enhance hydrologic function.
B. Achieve a mosaic of forage production and cover needs for wildlife and livestock.
C. Enhance the richness of plant and animal species.

SPECIAL STATUS, THREATENED AND ENDANGERED SPECIES
SOUTH STEENS ALLOTMENT

SPECIES	U.S. FISH AND WILDLIFE SERVICE STATUS	OREGON DEPT.FISH AND WILDLIFE STATUS	OREGON NATURAL HERITAGE PROGRAM
MAMMALS			
California Bighorn sheep	C2		4
Pacific Western big-eared bat	C2	SC	2
Spotted bat	C2		2
BIRDS			
Bald eagle	LT	LT	1
American peregrine falcon	LE	LE	1
Northern goshawk		SC	3
Swainson's hawk		SV	3
Ferruginous hawk	C2	SV	3
Burrowing owl		SC	3
Bufflehead		SP	2
Greater sandhill crane		SV	4
White-faced ibis	C2	SV	4
Western sage grouse	C2	SV	4
Yellow-billed cuckoo		SC	2
Bobolink		SC	3
Lewis woodpecker		SC	3
Western bluebird		SV	4
AMPHIBIANS			
Spotted frog		SC	
FISH			
Catlow tui chub	C2	SV	3
Inland redband trout	C2	SV	3
Catlow Valley redband trout	C2	SV	2

Definitions

Endangered taxa are those which are in danger of becoming extinct within the foreseeable future throughout all or a significant portion of their range.

Threatened taxa are those likely to become endangered within the foreseeable future.

LE=Listed Endangered. Taxa listed by the USFWS as Endangered under the Endangered Species Act (ESA), or by the State of Oregon Department of Agriculture (ODA) and ODFW under the Oregon Endangered Species Act of 1987 (OESA).

LT=Listed Threatened. Taxa listed by the USFWS, ODA, or ODFW as Threatened.

SC=State Critical. Species for which listing as threatened or endangered is pending; or those for which listing as threatened or endangered may be appropriate if immediate conservation actions are not taken. Also considered critical are some peripheral species which are at risk throughout their range and some disjunct populations.

SV=State Vulnerable. Species for which listing as threatened or endangered is not believed to be imminent and can be avoided through continued or expanded use of adequate protective measures and monitoring. In some cases, the population is sustainable, and protective measures are being implemented; in others, the population may be declining and improved protective measures are needed to maintain sustainable populations over time.

SP=State Peripheral or Naturally Rare. Peripheral species refer to those whose Oregon populations are on the end of their range. Naturally rare species are those which had low population numbers historically in Oregon because of naturally limiting factors. Maintaining the status quo for the habitats and populations of those species is a minimum requirement. Disjunct populations of several species which occur in Oregon should not be confused with peripheral.

C2=Candidate 2. USFWS candidates which need additional information in order to propose as Threatened or Endangered under the Endangered Species Act.

Oregon Natural Heritage Program List (ONHP)
1. Taxa threatened with extinction or presumed to be extinct throughout the entire range.
2. Taxa threatened with extinction or presumed to be extinct in Oregon.
3. Review list for species where more information is needed before status can be determined.
4. Taxa of concern but not currently threatened or endangered.

WATER QUALITY PARAMETERS

1. Water Temperatures

Generally, water temperatures during the warmer months are at the upper limit considered optimal for redband trout. Water temperatures which exceed Oregon DEQ water quality criteria (68 °F) have been recorded in Deep, Ankle, and Home Creeks. Some readings on Ankle Creek, and Home Creek, and Skull Creek have exceeded 78 °F (Burns District Files). Abundant springs along reaches of Deep Creek, Ankle Creek, Mud Creek, and the South Fork of the Donner und Blitzen River ameliorate water temperatures during the warmer months.

2. Stream Discharge and Flows

Headwater streams are small, with low flows of 1 to 7 cubic feet/second (cfs) common, but with peak flows exceeding 30 cfs during spring runoff.

The South Fork of the Donner und Blitzen River below the confluence of Mud Creek often ranges from 20 to 30 cfs during summer low flow periods. Peak flows may exceed 200 cfs at this point. The main stem of the Blitzen River near Page Springs (outside of the allotment) has a 61-year peak flow of 4,270 cfs (April 26, 1978) and a 91,460-acre feet/year average discharge during that period (reference). Of the 128,692 acres of watershed upstream from that point over 73,091 acres, 57 percent of it is within the South Steens Allotment. Of the headwater tributaries streams, the Ankle Creek drainage is the largest with 13,545 acres. Most of the 30,007-acre watershed in the Skull Creek drainage is on private property, with portions being fenced outside the allotment and separate from public lands. The drainage area of most streams is shown in Table A. The drainage area of many smaller streams has not been determined.

TABLE A
DRAINAGE AREA OF SELECTED STREAMS IN SOUTH STEENS ALLOTMENT

DRAINAGE NAME	ACRES IN ALLOTMENT	PERCENT OF DRAINAGE IN ALLOTMENT
Blitzen River Tributaries		
Ankle Creek	13,545	100
Big Indian Creek	3,794	96
Deep Creek	8,249	100
Little Indian Creek	1,587	92
Little Blitzen River	3,890	30
Mud Creek	3,655	100
* Other Streams		
* Home Creek	19,843	100
** Skull Creek	30,007	100
* Three Mile Creek	6,400	100

* Measured upstream from county road
** Mostly private land with the meadows fenced out of the allotment

The discharge from ephemeral streams having crest gauging stations was recorded and is shown in Table B.

TABLE B
ANNUAL PEAK DISCHARGE DATA FROM TWO CREST STAGE GAGING STATIONS
IN THE SOUTH STEENS ALLOTMENT*

Name and Location	Water Year	Date	Annual Peak Discharge cuft/sec	Basin Runoff ft 3/s/Mi^2
Donner und Blitzen Tributary (#10395800) NENE Sec 4 T34S,R32½E Drainage Area 4.81 mi^2	1975	3/25	94	19.5
	1976	3/01	50	10.4
	1978	4/26	335	69.6
Donner und Blitzen River Tributary (#10395700) NWSW Sec 7 T34S,R32E Drainage Area 0.98 mi^2	1978	4/26	26	26.5

* Burns District BLM Unit Resource Analysis. Water Resources 1981.

3. Sediment and Turbidity

Significant portions of public lands along Home Creek, Three Mile Creek, Skull Creek, and the South Fork of the Donner und Blitzen River have cutbanks prone to bank instability during high flows (1979 BLM) Streambank Stability Inventory, 1979 and 1991 Riparian Inventory, 1991 Aquatic Habitat Inventory (BLM monitoring studies Burns District.)

Records of suspended sediment sampling are limited and many samples were collected during low flow periods when little sediment would be expected. However, limited sampling during high runoff periods indicate sediment far in excess of optimum levels for trout habitat (BLM Unit Resource Analysis, Water Resources 1982, 1991 Aquatic Habitat Inventory, BLM fisheries files, various dates). Of three sampling records for the South Fork Blitzen River at Blitzen Crossing in 1979, the highest suspended sediment level was 1.76 tons/day during a low flow period and a mean during July, August, and September of 1.09 tons/day. During that same period, Home Creek had a high of .064 ton/day and a mean of .03 ton/day. Two records from Mud Creek recorded .03 ton/day during an August 1993 reading and .42 ton/day during a July 1987 reading. Two records from Ankle Creek recorded .10 ton/day and .59 ton/day during August 1982 and July 1983, respectively.

Records of turbidity sampling are more available than suspended sediment, but again, most data was recorded during moderate or low flow periods. Most readings are below the 25 Jackson Turbidity Units (JTUs), the upper limit for sight feeding fish, such as trout (Bauer and Burton, 1993). However, records from Three Mile Creek (up to 100 JTUs) and the South Fork Blitzen River at Blitzen Crossing (up to 120 JTUs) have greatly exceeded the 25 JTU threshold.

Prolonged turbidity can cover streambed gravel with silt smothering macroinvertebrates, cover spawning areas, and reduce photosynthetic rates.

4. Dissolved Oxygen

Dissolved oxygen levels are within those recommended for redband trout. Some records during summer are below optimal levels for the water temperatures. A few readings have been as low as 6 ppm (dangerous levels) during extended periods prior to cool evening temperatures (Cooperrider et al. 1986).

5. Specific Conductance

Observed specific conductance levels, as well as total alkalinity and total hardness levels, indicate total dissolved solids (TDS) levels were below those considered to be optimal for aquatic production.

6. Total Alkalinity and Total Hardness

Observed levels for total alkalinity and total hardness ranged from about 50 percent to 75 percent of what is considered to be the minimum for good aquatic production.

7. pH

Observed pH values were in the high end of the range considered good for fish production.

8. Sulfates

Observed sulphate levels were within the bounds considered to be desirable.

9. Nitrate Nitrogen

Nitrate, nitrogen levels were high enough to limit fish production. Some levels observed were high, nearly five times that considered excellent for fish production.

10. Color

Observed values indicate significantly increased phytoplankton production during the summer months over that which would be considered desirable.

11. Macroinvertebrates

Macroinvertebrates are those invertebrates that can be detected with the unaided eye. They are essential to the growth and production of fish and, because of their strict habitat requirements, are very useful indicators of aquatic habitat changes. When linked to other factors, macroinvertebrate data can assist in assessing impacts to stream ecosystems from land management activities (Cuplin, Paul, 1986). For example, the absence of woody riparian species needed for the reproduction of many macroinvertebrates may limit the food base of any stream system (Erman, 1984). He found that "aquatic insects have intricate life cycles which if interrupted at any point may mean the disappearance or reduction of a given species in a given area."

Macroinvertebrate collection from 1982 through 1987 provided valuable data on species richness and abundance for most streams in the South Steens Allotment.

Despite annual fluctuations in grazing use, climate, and stream flows there were consistent findings for South Steens streams. Analysis of macroinvertebrate collections (Aquatic Ecosystem Inventory, Annual Progress Reports, Burns District files) for Ankle Creek, Mud Creek, Deep Creek, South Fork Blitzen River, and Home Creek show that all streams contained high numbers of species tolerant to sedimentation, that stressful conditions occurred for good macroinvertebrate productivity and stream conditions were below optimum.

Considerable variation occurred from year to year and seasonally in productivity and ranged from a low of .1 gram/meter^2 in an August 10, 1982 sample to a high of 11.7 grams/meter^2 in a September 17, 1987 sample, both at the same station on the South Fork Blitzen River.

In general, fish productivity in the Blitzen River watershed is below the optimum level because of reduced invertebrate levels, below normal dissolved solids and pH, higher than normal water temperature, sediment, and nitrates, and low levels of dissolved oxygen.

SOUTH STEENS
WILD HORSE HERD MANAGEMENT AREA
PLAN UPDATE

I. INTRODUCTION

The Bureau of Land Management (BLM) is required by policy to manage and protect wild horses and burros and their habitat as an integral part of the public lands ecosystem under the principle of "Ecosystem Based Management." The authority to manage wild horses and burros comes from the Wild Horse and Burro Act of 1971, the Federal Land Policy and Management Act (FLPMA) of 1976, the Taylor Grazing Act of 1934, the National Environmental Policy Act of 1969, and the Public Rangelands Improvement Act (PRIA) of 1978.

The Wild Horse and Burro Act of 1971 defines wild, free-roaming horses and burros as "all unbranded and unclaimed horses and burros on public lands of the United States."

FLPMA allows the use of helicopters to round up horses and burros.

PRIA directs the BLM to remove excess wild horses and burros from public rangelands administered by BLM.

Wild horses and burros are a living legacy of our American heritage and it is important that they are recognized and maintained as a part of the natural ecosystem and are valued for their biological, social, and cultural attributes.

This plan is a guideline to provide management to maintain a viable population of wild horses in the South Steens Herd Management Area (HMA). Management will provide a thriving ecological balance with other resources present within the active HMA.

II. PRESENT SITUATION

The South Steens Wild Horse Herd Area was established in 1971 with the passage of the Wild Horse and Burro Act. The original Herd Area was approximately 252,235 acres in size with geographic boundaries being Frenchglen in the north, Fields in the south, Catlow Rim in the west, and Alvord Desert in the east. The Herd Area contained parts or all of five grazing allotments: South Steens No. 6002, Frazier Field No. 6006, Wildhorse Canyon No. 6013, Tule Springs No. 6018, and Andrews No. 6019.

The original Herd Area was established using the criteria that if there were horses in a particular area, then it was part of a Herd Area. Following the formation of the Herd Area, some conflicts were apparent with horses and other resources. The Management Framework Plan (MFP) of 1982 and the Rangeland Program Summary (RPS) of 1984 adjusted the original Herd Area and designated the active Herd Management Area (HMA) boundary. The MFP decision excluded the Wildhorse Canyon, Tule Springs, and Andrews Allotments from wild horse use due to conflicts with bighorn sheep, a Category 2 Federal candidate species for listing as threatened or endangered, and its habitat. Wild horses presently occupy the area within the active HMA boundary, which contains 163,452 total acres. See the map for the boundary of the original Herd Area and the present active HMA.

The MFP also provided the Appropriate Management Level (AML) of horses within the HMA at a range of from 150 to 300 head, based on the amount of forage available. The available forage was allocated to wild horses based on the Frenchglen Range Survey, completed in the mid-1960's. The survey determined the total amount of forage available, and that forage was allocated to wildlife, livestock, wild horses, and other uses. The number of Animal Unit Months (AUMs) of available forage that was allocated to wild horses at that time was 3,600, or 300 head of horses for 12 months.

In 1985, the State of Oregon and the BLM completed a land exchange that transferred title to BLM, all of the State School Sections within the Herd Area and the active HMA but one section near Frenchglen. Other lands were obtained by BLM through a land purchase with the Wildhorse Ranch. The HMA was then plotted in the Geographic Information System (GIS) and revised acreage was calculated. The revised acreage for the total South Steens Herd Area and the active HMA are as follows:

WILD HORSE MANAGEMENT AREA IN ACRES

AREA	PUBLIC	PRIVATE	STATE	TOTAL
Active HMA	132,116	30,672	664	163,452
Total Herd Area	203,433	72,597	664	276,694

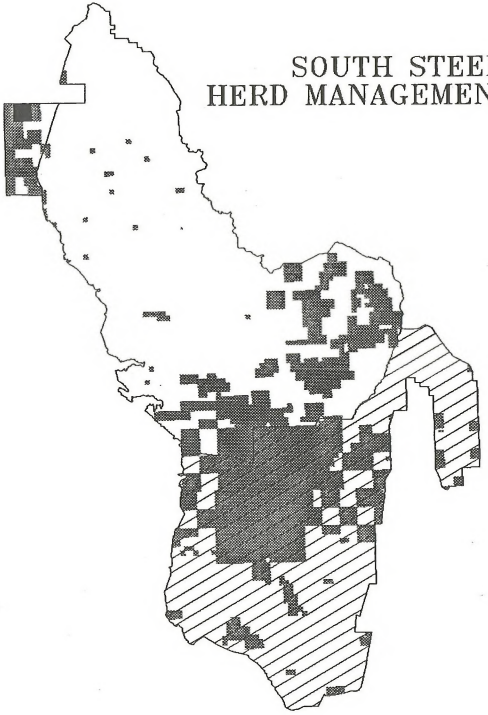
The active HMA is presently part of three grazing allotments: South Steens No. 6002, Frazier Field No. 6006, and Lavoy Tables No. 6031. Three different permittees graze livestock in those three allotments.

In 1987, the Drewsey, Andrews, and Riley MFPs were amended to remove wild horses from the Riddle Mountain HMA, much of which was transferred to the State of Oregon in a land exchange. To compensate for the removal of horses from that area, seven other HMAs were adjusted, adding more horses to those areas. The AML for the South Steens HMA changed from a range of 150 to 300 animals to a range of 159 to 304 animals. The total allocation of forage changed from 3,600 to 3,648 AUMs each year, or an additional yearly allocation for four head of horses.

Three pastures within the Frazier Field Allotment were within the active South Steens HMA. In 1990, to facilitate livestock management, the Frazier Field Allotment was split and one of the three pastures was placed in the neighboring Lavoy Tables Allotment No. 6031. The original three pastures were the West Upper River, West Lower River, and P Hill Pastures, and the total forage allocation for wild horses in all three pastures was 108 AUMs. The P Hill Pasture was moved to the Lavoy Tables Allotment along with an allocation of 36 AUMs. The other two pastures remaining in the Frazier Field Allotment have an allocation of 72 AUMs. The end result of this action was that a new allotment was added to the HMA.

The map showing the location of the original boundary of the South Steens Herd Area depicted the northwest boundary as being on the State Highway from the Hart Mountain turnoff to Roaring Springs. This arbitrary line split the Hollywood Field Pasture where there was no fence to stop animal movement. The area west of the highway was open to use by horses, but it was not considered to be in the Herd Area. The Andrews MFP decision added that area, totaling 7,329 acres, to the active HMA, so the boundary now extends west, to the South Steens Allotment boundary (see Map).

SOUTH STEENS HERD MANAGEMENT AREA



LEGEND

- ACTIVE AREA
- INACTIVE AREA
- PRIVATE LAND
- STATE LAND
- BLM LAND

N

NO SCALE AVAILABLE

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
BURNS DISTRICT
1994

MAP PREPARED BY THE BURNS DISTRICT
THROUGH NON-CARTOGRAPHIC METHODS

APPENDIX F

Ecological Status (Acres) by Pasture

PASTURE	EARLY SERAL	MID-SERAL	LATE SERAL	POTENTIAL NATURAL COMMUNITY	UNCLASSIFIED
Hollywood Field	3,468.9	4,152.1	1,200	0	218.9
South Catlow	25,667.1	62,502.3	23,497.7	0	4,044.5
South Steens	6,577.4	79,684.6	40,375.2	4,472.9	11,642.0
Skull Creek	72	16,379.9	3,743.1	0	1,981.5
Skull Lake	0	7,615.6	5,266.8	0	1,030.2
Telephone Field	2,158.8	1,729.5	287.4	0	750.1
V Lake	83.7	4,375.3	112.9	0	1,146.2
Skull Butte Private	0	641.5	195.4	0	663.9
Spangenberg	0	2,282.4	384.7	0	2,855.1
Fenced Federal and Little Blitzen	245.1	4,361.9	2,643.9	0	3,889.6

SOUTH STEENS MONITORING PLAN

1. RIPARIAN

WHAT WILL BE MEASURED	HOW MEASUREMENTS WILL BE MADE	WHO WILL DO THIS AND WHEN/FREQUENCY
Utilization (herbaceous and woody)	Herbaceous: key forage species method (volume)	BLM annually (periodically through growing season)
	Woody: twig length measurement TR 4400-3	
	Utilization mapping for intensity	BLM approximately every 2 years
Determine Standing Vegetation (herbaceous)	Measure stubble height (determine target heights by species)	BLM following grazing (periodic checks through growing season)
Change in Vegetation (trend)	Photo points (locate additional points 1994)	BLM and Ranch annually
	(Canopy Cover) line intercept transect with meter rod for density of woody species done in key areas. To be determined by BLM and Ranch.	BLM and Ranch 3 to 5 years
*	Infrared aerial photo interpretation	BLM 3 to 5 years
Animal Distribution	Use supervision	BLM throughout season - annually
	Time lapse photography (1 to 2 sites)	BLM throughout season
	Actual use and counts from ranch	BLM and Ranch throughout season - annually
Soil Stability	Line intercept/sagline transect	BLM 3 to 5 years
Beaver Site Monitoring	Photo points	ODFW/BLM annually

*Climatic data needed

2. UPLANDS

WHAT WILL BE MEASURED	HOW MEASUREMENTS WILL BE MADE	WHO WILL DO THIS AND WHEN/FREQUENCY
Vegetation Change (trend)	Pace 180° transect-cover/plant composition key areas; eight sites at current time	BLM and Ranch 3 to 5 years
	Photos overview transect and 3 x 3 plot	BLM and Ranch 3 to 5 years
	Stratification of ecological sites to update key areas; number of sites to be determined in 1994	
	Ecological site reevaluation	BLM 10 years
Plant Community Mosaic	GIS ecological site maps dominant vegetation acres	BLM 1994
	Juniper: line intercept canopy cover; belt transect (1-meter) density, composition; number of sites to be determined in 1994	Northern Great Basin Experimental Range Station/BLM 5 to 10 years
	Aspen: same as above two sites	Except 2 to 3 years frequency
	Bitterbrush: Cole browse transect; two sites	BLM 3 to 5 years
	Soil stability: line intercept sagline transect; two sites	BLM 3 to 5 years
*	Two-way exclosures; number of sites to be determined during 1994	BLM and Northern Great Basin Experimental Station
Utilization	Key forage species method (volume) approximately 60 sites currently monitored	BLM and Ranch annually
Animal Distribution	Use supervision	BLM and Ranch
	Actual use and reports throughout season from Ranch	BLM and Ranch

*Climatic data needed

3. WILD HORSES

WHAT WILL BE MEASURED	HOW MEASUREMENTS WILL BE MADE	WHO WILL DO THIS AND WHEN/FREQUENCY
Numbers of Animals	Helicopter counts	BLM 1 to 2 years
Distribution: Which Animals are in what Areas, Season Use, Migration Patterns	Helicopter counts; BLM, Ranch, and ODFW observations; aerial and ground, use supervision	BLM, Ranch, and ODFW (annual, throughout season)
Utilization	Time lapse photographs; key forage species method (volume); utilization cages for comparison	BLM annually
*	BLM will provide map and forms for census counts and horse observations	BLM winter 1994

*Climatic data needed

4. T&E SENSITIVE SPECIES

WHAT WILL BE MEASURED	HOW MEASUREMENTS WILL BE MADE	WHO WILL DO THIS AND WHEN/FREQUENCY
Identify Known Populations and Their Habitat	Inventory colonies or populations which could be impacted by ground management activities	BLM, Ranch, ODFW
*		

*Climatic data needed

5. FORAGE RESOURCE

WHAT WILL BE MEASURED	HOW MEASUREMENTS WILL BE MADE	WHO WILL DO THIS AND WHEN/FREQUENCY
Level of Forage Consumed	Actual use livestock Refer to monitoring studies for Wildlife, Riparian, Wild Horses, and Upland Estimate wild horse and big game use through numbers and season Climatic data	BLM, Ranch, ODFW; review results of annual summary and evaluations. Formal evaluation 3 to 5 years.
*		

*Climatic data needed

6. WILDERNESS

WHAT WILL BE MEASURED	HOW MEASUREMENTS WILL BE MADE	WHO WILL DO THIS AND WHEN/FREQUENCY
Occurrence of Ground Disturbance and Wilderness Use	Surveillance for interim management of Wilderness Study Areas Photo points at campsites or sites of human impact (limits of acceptable change	BLM

7. WILD AND SCENIC RIVER CORRIDOR

WHAT WILL BE MEASURED	HOW MEASUREMENTS WILL BE MADE	WHO WILL DO THIS AND WHEN/FREQUENCY
See Riparian, Upland, Wild Horse, Wilderness, and T&E Sensitive Species Human Impacts	See Riparian, Upland, Wild Horse, Wilderness, and T&E Sensitive Species Photo points at campsites along river; measure limits of acceptable change	BLM

8. FISHERIES/AQUATIC HABITAT

WHAT WILL BE MEASURED	HOW MEASUREMENTS WILL BE MADE	WHO WILL DO THIS AND WHEN/FREQUENCY
Water Temperature	Hobo temps $100.00 per unit, monitor at 12 locations	BLM annually beginning in 1994
Check for Diversity in Fish Populations (Age, Classes, Species)	Sample populations in early fall	ODFW 3 to 5 years
Macroinvertebrates *	Macroinvertebrate sampling number of sites to be determined	BLM 3 to 5 years

*Climatic data needed

9. WILDLIFE HABITAT

WHAT WILL BE MEASURED	HOW MEASUREMENTS WILL BE MADE	WHO WILL DO THIS AND WHEN/FREQUENCY
Overall Habitat Mosaic	Aerial photos, GIS ecological site maps dominate vegetation (acres)	BLM
Habitats for Amphibians, Reptiles, Mammals, Birds, Predators	Sage grouse inventory (radio collars and lek counts)	ODFW and BLM
	Bighorn sheep, deer, elk, antelope inventories	ODFW
*	Small animals inventories (small mammals, reptiles, amphibians, and birds)	BLM interns (search for other partners)

*Climatic data needed

10. REINTRODUCTION OF FIRE

WHAT WILL BE MEASURED	HOW MEASUREMENTS WILL BE MADE	WHO WILL DO THIS AND WHEN/FREQUENCY
Vegetation Mosaic Percent of Each Plant Community and Seral Stage Burned Over Time	Mapping - using aerial photos and ortho-photo quads; determine acres by community	BLM
Post Fire Vegetation Change	Step point Pace 180°; cover/composition line intercept with belt transect	Northern Great Basin Experiment Range Station, Ranch, ODFW base data first year then 3 to 5 years
*Climatic Data	Two remote climate stations required RAWS or minimum locate rain gauges at two sites and ensure monitoring	Throughout year

*Climatic data needed

APPENDIX H

GENERAL SCHEDULE FOR ADAPTIVE ROTATIONAL GRAZING

The initial stocking level would be determined with ranch based on previous year's monitoring results.

In year 1: Spring grazing would begin from the south end; the Skull Creek and Skull Lake Pastures would be grazed from April 1 to July 1. Within these pastures, cattle would be herded to uplands with use on Skull Creek managed within target utilization levels. In Skull Lake Pasture, the eastern boundary would be ridden to ensure cattle stay within allotment boundaries. Livestock would be moved to Penland Pasture and High Steens as early as conditions permit (typically around June 15). The Spangenberg Seeding would be grazed with the Skull Creek and Skull Lake Pastures during a season of April 1 to May 15. Livestock would be grazed in Penland and High Steens Pastures from June 15 to July 30. On or about July 15, livestock would begin to be moved to private pastures (V Lake and Telephone Field). Livestock would be grazed in the private pastures until utilization levels are achieved, approximately September 15. Livestock would then be trailed through Skull Lake or Skull Creek Pastures to Skull Butte private or other ranch base property.

During this year, lower portion of Steens Pasture and Hollywood Field would be rested; upper Steens and Penland Pastures would receive early grazing treatment; and Skull Creek, Skull Lake, Telephone Field, and V Lake would be grazed during the growing season.

The South Catlow Pasture would be grazed during the winter every year during a season of November 15 to March 15. It would be stocked with 2,000 cattle for this beginning stocking level. Actual stocking level would be determined by rangeland monitoring studies.

In year 2: The Skull Lake, Skull Creek, and Spangenberg Seeding Pastures would be grazed from April 1 to July 1. Livestock would begin to be moved to private fields (V Lake and Telephone Fields) as soon as conditions permit, typically June 15. These pastures would be grazed until July 30. On approximately July 15 or as utilization indicates, livestock would begin to be moved to Penland Pasture. Livestock would graze on the Penland Pasture until target utilizations levels are achieved, approximately September 15. The livestock would then be trailed through Skull Creek and Skull Lake Pastures to base property. Winter use would be as described in year one.

In year 2, Steens and Hollywood Field Pastures would be rested, Penland would have partial deferment, Skull Creek, Skull Lake, Spangenberg Seeding, and the private pastures would be grazed during the growing season. The South Catlow Pasture would receive winter treatment.

In year 3: The Steens Pasture would be grazed from April 1 to July 30. The Hollywood Field would be grazed with South Steens Pasture during the period of April 1 to June 30. Cattle would be herded from riparian zones to uplands throughout this use period. At about July 1, as climate, plant phenology, and utilization levels indicate, cattle would start to be moved to the private fields (V Lake and Telephone Fields). Livestock would graze within these pastures during the season of July 1 to August 15. As early as August 1, cattle would begin to be moved to Skull Creek and Skull Lake Pastures. Livestock would graze in these pastures until utilization targets are achieved, approximately September 30. The Spangenberg Seeding would be grazed during September and October.

In year 3, Steens Pasture, Hollywood Field, Telephone Field, and V Lake would be grazed during the growing season. The Penland Pasture would be rested. The Spangenberg Seeding, Skull Creek, and Skull Lake Pastures would receive deferred treatment and South Catlow Pasture would receive winter treatment.

In year 4, the Steens Pasture would be grazed from April 1 to July 15. The Hollywood Field would be grazed with the Steens Pasture during the period of April 1 to June 30. Cattle would be moved from riparian zones to uplands throughout this use period. At about June 15 or as plant phenology and utilization levels indicate, cattle would start to be moved from Steens Pasture to Penland Pasture. The cattle grazing riparian zones would be the first cattle to be moved. All cattle would be moved from Steens Pasture by July 15. Cattle would graze in the Penland Pasture from as early as June 15 to August 15. At about July 15 or as key plant phenology and utilization levels indicate, the livestock would start to be moved to the private pastures (V Lake and Telephone Field). All cattle would be removed from the Penland Pasture by August 15. Cattle would begin to be moved from V Lake and Telephone Fields to Skull Lake and Skull Creek Pastures as early as August 1. These pastures would be grazed through September or until target utilization levels are achieved. Cattle would be grazed in the Spangenberg Seeding in September and October.

In year 4, the Steens Pasture, Hollywood Field, and Penland Pastures would receive growing season treatment; V Lake and Telephone Field partial deferment; Skull Creek, Skull Lake, and Spangenberg Seeding would be deferred. The South Catlow Pasture would receive winter grazing treatment.

Appendix H

GRAZING FORMULA

TREATMENT	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEP.	OCT.	NOV.	DEC.
Growing Season												
Early Graze Riparian												
Partial deferment												
deferment												
rest				NO GRAZING								
winter												

YEARLY GRAZING SCHEDULE

	MANAGEMENT UNIT	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEP.	OCT.	NOV.	DEC.
First Year 19	SOUTH CATLOW												
	SPANGEN bore seeding												
	STEENS												
	Hollywood Field					REST							
	PENLAND												
	TELEPHONE Field												
	V LAKE												
	SKULL CREEK												
	SKULL LAKE												
Second Year 19	SOUTH CATLOW												
	SPANGEN bore seeding												
	STEENS				REST								
	Hollywood Field				REST								
	PENLAND												
	TELEPHONE Field												
	V LAKE												
	SKULL CREEK												
	SKULL LAKE												
Third Year 19	SOUTH CATLOW												
	SKULL CREEK												
	SKULL LAKE												
	SPANGEN bore seeding												
	V LAKE												
	TELEPHONE Field												
	PENLAND				REST								
	STEENS												
	Hollywood Field												
Fourth Year 19	SOUTH CATLOW												
	SKULL CREEK												
	SKULL LAKE												
	SPANGEN bore seeding												
	V LAKE PENLAND												
	V LAKE												
	TELEPHONE Field												

Estimated Livestock Grazing Capacity by Pasture
In AUMs (Private and Public Lands Included)

South Steens	12,000
Penland	4,500
South Catlow	9,000
Spangenberg Seeding	2,000
Skull Creek	4,200
Skull Lake	3,000
Telephone Field	2,464
V Lake	2,860
Hollywood Field	800
Skull Butte Private	Excluded from Allotment
Little Blitzen	1,830

Key Plant Species within Pastures

UPLAND KEY PLANT SPECIES	PASTURES
Thurber's needlegrass	Hollywood Field, South Steens, Skull Creek, Skull Lake
Needle and thread	Hollywood Field
Idaho fescue	South Steens, Penland, Telephone Field, V Lake, Skull Creek, Skull Lake, Hollywood Field
Bottlebrush squirreltail	South Steens, Hollywood Field, South Catlow, Spangenberg Pasture
Bluebunch wheatgrass	Skull Lake, Skull Creek, South Steens, Penland, Telephone Field, V Lake
Mountain brome	South Steens, Penland, Telephone Field, V Lake
Crested wheatgrass	Spangenberg Pasture
Winterfat	South Catlow
Nuttall saltbush	South Catlow
Bitterbrush	South Steens, Skull Creek, Skull Lake
Sedges	South Steens, Penland, Skull Creek, Skull Lake, Telephone Field, V Lake
Rushes	South Steens, Penland, Skull Creek, Skull Lake, Telephone Field, V Lake
Willows	South Steens, Penland, Skull Creek, Skull Lake, Telephone Field, V Lake
Alder	South Steens, Penland, Skull Creek, Skull Lake, Telephone Field, V Lake

General Schedule for Seasonal Grazing April 1 - July 15
on Public Land Above (east of) Catlow Rim

The initial stocking level would be determined with the ranch based on current permit and rangeland monitoring.

In Year 1: Spring grazing would begin on the north end of the allotment within South Steens Pasture and Hollywood Field on or about April 1. Livestock would be distributed throughout these areas. Livestock would be moved above the South Fork of the Donner und Blitzen River around June 15 or as climate and plant phenology permits. The Penland Pasture would be grazed with Upper South Steens at this time. All livestock would be removed from public lands east of Catlow Rim by July 15. Livestock would be removed via the North and South Pastures and could be summered on the mountain within V Lake and Telephone Field Pastures and Skull Butte private and or intermingled private land blocks if fenced. A trailing permit would be issued for livestock as they are taken across public lands east of Catlow Rim to base property after July 15.

The pastures below Catlow Rim west of 205 would be grazed as follows: The South Catlow Pasture would be grazed each winter with 1,800 - 2,000 cows from November 15 to March 15. The Spangenberg Seeding would be grazed in Years 1 and 2 during March to mid-April with the cattle that were on South Catlow.

In Year 2: Grazing would be as outlined for Year 1 with changes considered with ranch due to previous year's monitoring results and current climatic conditions.

In Year 3 and Year 4: Spring grazing would begin on or about April 1 with the cow/calf herd being divided and beginning grazing at both the north and south ends. All public land above (east) of Catlow Rim would be grazed from April 1 - July 15. Cattle would be taken from the mountain via South Steens and Skull Creek Pastures or summered on the private pastures of V Lake, Telephone Field, Skull Butte private, and/or any private land blocks which would be fenced. Any cattle moved across public lands east of Catlow Rim after July 15 would require a trailing permit.

The pastures below Catlow Rim west of 205 would be grazed as follows: The South Catlow Pasture would be grazed as described in the previous 2 years. The Spangenberg Seeding would be grazed in April and May in Year 3 and would be rested in either Year 4 or Year 2.

If this alternative were selected, Hollywood Field would be rested periodically and portions of all public land pastures grazed during the growing season would receive periodic partial rest through the use of riders. Riders would be used by the ranch to remove cattle from Lower Home Creek (Home Creek Butte to Upper Crossing).

Appendix J

TREATMENT	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEP.	OCT.	NOV.	DEC.
Growing Season												
Early Grass Riparian												
Partial deferment												
deferment												
rest				NO GRAZING								
Winter												

YEARLY GRAZING SCHEDULE

	MANAGEMENT UNIT	JAN.	FEB.	MAR.	APR.	MAY.	JUNE	JULY	AUG.	SEP.	OCT.	NOV.	DEC
First Year 19	SOUTH CATTLAW												
	Spangelberg Seeding												
	STEENS												
	Hollywood Field												
	PENLAND												
	Telephone Field												
	V LAKE												
	SKULL CREEK					REST		TRAIL TO Private					
	SKULL LAKE					REST							
Second Year 19	SOUTH CATTLAW												
	Spangelberg Seeding												
	STEENS												
	Hollywood Field												
	PENLAND												
	Telephone Field												
	V LAKE												
	SKULL CREEK					REST		TRAIL TO Private					
	SKULL LAKE					REST							
Third Year 19	SOUTH CATTLAW												
	Spangelberg Seeding												
	STEENS												
	Hollywood Field					REST							
	PENLAND					REST							
	Telephone Field												
	V LAKE												
	SKULL CREEK												
	SKULL LAKE												
Fourth Year 19	SOUTH CATTLAW												
	Spangelberg Seeding												
	STEENS					REST							
	Hollywood Field					REST							
	Penland												
	Telephone Field												
	V LAKE												
	SKULL CREEK												
	SKULL LAKE												

BLM LIBRARY
RS 150A BLDG. 50
DENVER FEDERAL CENTER
P.O. BOX 25047
DENVER, CO 80225

ER'S CARD
5 1994
Land
rns District.
lotment
1 and

OFFICE	DATE RETURNED

(Continued on reverse)

QH 76.5 .07 B876 1994
U. S. Bureau of Land
Management. Burns District.
South Steens Allotment
management plan and

BLM LIBRARY
RS 150A BLDG. 50
DENVER FEDERAL CENTER
P.O. BOX 25047
DENVER, CO 80225